

SAP WorkSheet: New dwelling as built

User Details:

Assessor Name: Ondrej Gajdos

Stroma Number:

STRO006629

Software Name: Stroma FSAP 2012

Software Version:

Version: 1.0.4.23

Property Address: Main House

Address : Athlone House, Hampstead Lane, LONDON, N6 4RU

1. Overall dwelling dimensions:

	Area(m ²)		Av. Height(m)		Volume(m ³)
Basement	179.2 (1a)	x	2.9 (2a)	=	519.68 (3a)
Ground floor	1310.1 (1b)	x	4.45 (2b)	=	5829.94 (3b)
First floor	749.3 (1c)	x	3.8 (2c)	=	2847.34 (3c)
Second floor	136.8 (1d)	x	3.2 (2d)	=	437.76 (3d)
Third floor	30.6 (1e)	x	4.15 (2e)	=	126.99 (3e)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)+.....(1n)	2406 (4)				
Dwelling volume			(3a)+(3b)+(3c)+(3d)+(3e)+.....(3n)	=	9761.71 (5)

2. Ventilation rate:

	main heating	secondary heating	other	total	m ³ per hour
Number of chimneys	0	+	0	=	0 (6a)
Number of open flues	0	+	0	=	0 (6b)
Number of intermittent fans				16	x 10 = 160 (7a)
Number of passive vents				0	x 10 = 0 (7b)
Number of flueless gas fires				0	x 40 = 0 (7c)

Air changes per hour

Infiltration due to chimneys, flues and fans = (6a)+(6b)+(7a)+(7b)+(7c) =	160	÷ (5) =	0.02 (8)
<i>If a pressurisation test has been carried out or is intended, proceed to (17), otherwise continue from (9) to (16)</i>			
Number of storeys in the dwelling (ns)			0 (9)
Additional infiltration		[(9)-1]x0.1 =	0 (10)
Structural infiltration: 0.25 for steel or timber frame or 0.35 for masonry construction <i>if both types of wall are present, use the value corresponding to the greater wall area (after deducting areas of openings); if equal user 0.35</i>			0 (11)
If suspended wooden floor, enter 0.2 (unsealed) or 0.1 (sealed), else enter 0			0 (12)
If no draught lobby, enter 0.05, else enter 0			0 (13)
Percentage of windows and doors draught stripped			0 (14)
Window infiltration	0.25 - [0.2 x (14) ÷ 100] =		0 (15)
Infiltration rate	(8) + (10) + (11) + (12) + (13) + (15) =		0 (16)
Air permeability value, q50, expressed in cubic metres per hour per square metre of envelope area			15 (17)
If based on air permeability value, then (18) = [(17) ÷ 20] + (8), otherwise (18) = (16)			0.77 (18)
<i>Air permeability value applies if a pressurisation test has been done or a degree air permeability is being used</i>			
Number of sides sheltered			0 (19)
Shelter factor	(20) = 1 - [0.075 x (19)] =		1 (20)
Infiltration rate incorporating shelter factor	(21) = (18) x (20) =		0.77 (21)

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Infiltration rate modified for monthly wind speed

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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Monthly average wind speed from Table 7

(22)m=	5.1	5	4.9	4.4	4.3	3.8	3.8	3.7	4	4.3	4.5	4.7
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Wind Factor (22a)m = (22)m ÷ 4

(22a)m=	1.27	1.25	1.23	1.1	1.08	0.95	0.95	0.92	1	1.08	1.12	1.18
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Adjusted infiltration rate (allowing for shelter and wind speed) = (21a) x (22a)m

	0.98	0.96	0.94	0.84	0.82	0.73	0.73	0.71	0.77	0.82	0.86	0.9
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Calculate effective air change rate for the applicable case

If mechanical ventilation:

0 (23a)

If exhaust air heat pump using Appendix N, (23b) = (23a) × Fmv (equation (N5)) , otherwise (23b) = (23a)

0 (23b)

If balanced with heat recovery: efficiency in % allowing for in-use factor (from Table 4h) =

0 (23c)

a) If balanced mechanical ventilation with heat recovery (MVHR) (24a)m = (22b)m + (23b) × [1 – (23c) ÷ 100]

(24a)m=	0	0	0	0	0	0	0	0	0	0	0	0	(24a)
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b) If balanced mechanical ventilation without heat recovery (MV) (24b)m = (22b)m + (23b)

(24b)m=	0	0	0	0	0	0	0	0	0	0	0	0	(24b)
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c) If whole house extract ventilation or positive input ventilation from outside

if (22b)m < 0.5 × (23b), then (24c) = (23b); otherwise (24c) = (22b) m + 0.5 × (23b)

(24c)m=	0	0	0	0	0	0	0	0	0	0	0	0	(24c)
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d) If natural ventilation or whole house positive input ventilation from loft

if (22b)m = 1, then (24d)m = (22b)m otherwise (24d)m = 0.5 + [(22b)m² x 0.5]

(24d)m=	0.98	0.96	0.94	0.86	0.84	0.77	0.77	0.75	0.79	0.84	0.87	0.91	(24d)
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Effective air change rate - enter (24a) or (24b) or (24c) or (24d) in box (25)

(25)m=	0.98	0.96	0.94	0.86	0.84	0.77	0.77	0.75	0.79	0.84	0.87	0.91	(25)
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3. Heat losses and heat loss parameter:

ELEMENT	Gross area (m²)	Openings m²	Net Area A ,m²	U-value W/m²K	A X U (W/K)	k-value kJ/m²·K	A X k kJ/K
Doors Type 1			3.57	x 1.38	= 4.9266		(26)
Doors Type 2			1.96	x 1.38	= 2.7048		(26)
Doors Type 3			2.07	x 1.38	= 2.8566		(26)
Windows Type 1			0.54	x1/[1/(1.5)+ 0.04] =	0.76		(27)
Windows Type 2			1.99	x1/[1/(1.5)+ 0.04] =	2.82		(27)
Windows Type 3			12.19	x1/[1/(1.5)+ 0.04] =	17.25		(27)
Windows Type 4			9.75	x1/[1/(1.5)+ 0.04] =	13.8		(27)
Windows Type 5			0.28	x1/[1/(1.5)+ 0.04] =	0.4		(27)
Windows Type 6			1.65	x1/[1/(1.5)+ 0.04] =	2.33		(27)
Windows Type 7			1.39	x1/[1/(1.5)+ 0.04] =	1.97		(27)
Windows Type 8			7.35	x1/[1/(1.5)+ 0.04] =	10.4		(27)
Windows Type 9			5.4	x1/[1/(1.5)+ 0.04] =	7.64		(27)
Windows Type 10			5.4	x1/[1/(1.5)+ 0.04] =	7.64		(27)

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Windows Type 11	5.4	$\times 1/\sqrt[1]{(1.5)+0.04}$	7.64	(27)
Windows Type 12	3.04	$\times 1/\sqrt[1]{(1.5)+0.04}$	4.3	(27)
Windows Type 13	1.24	$\times 1/\sqrt[1]{(1.5)+0.04}$	1.75	(27)
Windows Type 14	1.24	$\times 1/\sqrt[1]{(1.5)+0.04}$	1.75	(27)
Windows Type 15	1.88	$\times 1/\sqrt[1]{(1.5)+0.04}$	2.66	(27)
Windows Type 16	4.18	$\times 1/\sqrt[1]{(1.5)+0.04}$	5.92	(27)
Windows Type 17	1.84	$\times 1/\sqrt[1]{(1.5)+0.04}$	2.6	(27)
Windows Type 18	1.84	$\times 1/\sqrt[1]{(1.5)+0.04}$	2.6	(27)
Windows Type 19	1.84	$\times 1/\sqrt[1]{(1.5)+0.04}$	2.6	(27)
Windows Type 20	1.84	$\times 1/\sqrt[1]{(1.5)+0.04}$	2.6	(27)
Windows Type 21	9.75	$\times 1/\sqrt[1]{(1.5)+0.04}$	13.8	(27)
Windows Type 22	2.76	$\times 1/\sqrt[1]{(1.5)+0.04}$	3.91	(27)
Windows Type 23	2.76	$\times 1/\sqrt[1]{(1.5)+0.04}$	3.91	(27)
Windows Type 24	5.36	$\times 1/\sqrt[1]{(1.5)+0.04}$	7.58	(27)
Windows Type 25	5.36	$\times 1/\sqrt[1]{(1.5)+0.04}$	7.58	(27)
Windows Type 26	3.95	$\times 1/\sqrt[1]{(1.5)+0.04}$	5.59	(27)
Windows Type 27	6.09	$\times 1/\sqrt[1]{(1.5)+0.04}$	8.62	(27)
Windows Type 28	2.83	$\times 1/\sqrt[1]{(1.5)+0.04}$	4	(27)
Windows Type 29	2.83	$\times 1/\sqrt[1]{(1.5)+0.04}$	4	(27)
Windows Type 30	4.33	$\times 1/\sqrt[1]{(1.5)+0.04}$	6.13	(27)
Windows Type 31	2.16	$\times 1/\sqrt[1]{(1.5)+0.04}$	3.06	(27)
Windows Type 32	2.16	$\times 1/\sqrt[1]{(1.5)+0.04}$	3.06	(27)
Windows Type 33	8.7	$\times 1/\sqrt[1]{(1.5)+0.04}$	12.31	(27)
Windows Type 34	1.23	$\times 1/\sqrt[1]{(1.5)+0.04}$	1.74	(27)
Windows Type 35	1.23	$\times 1/\sqrt[1]{(1.5)+0.04}$	1.74	(27)
Windows Type 36	1.23	$\times 1/\sqrt[1]{(1.5)+0.04}$	1.74	(27)
Windows Type 37	3.72	$\times 1/\sqrt[1]{(1.5)+0.04}$	5.26	(27)
Windows Type 38	3.65	$\times 1/\sqrt[1]{(1.5)+0.04}$	5.17	(27)
Windows Type 39	1.92	$\times 1/\sqrt[1]{(1.5)+0.04}$	2.72	(27)
Windows Type 40	4.94	$\times 1/\sqrt[1]{(1.5)+0.04}$	6.99	(27)
Windows Type 41	3.12	$\times 1/\sqrt[1]{(1.5)+0.04}$	4.42	(27)
Windows Type 42	1.56	$\times 1/\sqrt[1]{(1.5)+0.04}$	2.21	(27)
Windows Type 43	1.56	$\times 1/\sqrt[1]{(1.5)+0.04}$	2.21	(27)
Windows Type 44	0.23	$\times 1/\sqrt[1]{(1.5)+0.04}$	0.33	(27)
Windows Type 45	4.49	$\times 1/\sqrt[1]{(1.5)+0.04}$	6.35	(27)
Windows Type 46	1.95	$\times 1/\sqrt[1]{(1.5)+0.04}$	2.76	(27)
Windows Type 47	1.95	$\times 1/\sqrt[1]{(1.5)+0.04}$	2.76	(27)
Windows Type 48	18.54	$\times 1/\sqrt[1]{(1.5)+0.04}$	26.24	(27)
Windows Type 49	7.54	$\times 1/\sqrt[1]{(1.5)+0.04}$	10.67	(27)

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Windows Type 50	15.34	$\times 1/\sqrt[1]{(1.5)+0.04} =$	21.71	(27)
Windows Type 51	3.02	$\times 1/\sqrt[1]{(1.5)+0.04} =$	4.27	(27)
Windows Type 52	3.02	$\times 1/\sqrt[1]{(1.5)+0.04} =$	4.27	(27)
Windows Type 53	3.7	$\times 1/\sqrt[1]{(1.5)+0.04} =$	5.24	(27)
Windows Type 54	11.72	$\times 1/\sqrt[1]{(1.5)+0.04} =$	16.58	(27)
Windows Type 55	3.38	$\times 1/\sqrt[1]{(1.5)+0.04} =$	4.78	(27)
Windows Type 56	1.47	$\times 1/\sqrt[1]{(1.5)+0.04} =$	2.08	(27)
Windows Type 57	1.47	$\times 1/\sqrt[1]{(1.5)+0.04} =$	2.08	(27)
Windows Type 58	15.45	$\times 1/\sqrt[1]{(1.5)+0.04} =$	21.86	(27)
Windows Type 59	5.4	$\times 1/\sqrt[1]{(1.5)+0.04} =$	7.64	(27)
Windows Type 60	13.28	$\times 1/\sqrt[1]{(1.5)+0.04} =$	18.79	(27)
Windows Type 61	9.49	$\times 1/\sqrt[1]{(1.5)+0.04} =$	13.43	(27)
Windows Type 62	1.21	$\times 1/\sqrt[1]{(1.5)+0.04} =$	1.71	(27)
Windows Type 63	10.98	$\times 1/\sqrt[1]{(1.5)+0.04} =$	15.54	(27)
Windows Type 64	9	$\times 1/\sqrt[1]{(1.5)+0.04} =$	12.74	(27)
Windows Type 65	50.33	$\times 1/\sqrt[1]{(1.5)+0.04} =$	71.22	(27)
Windows Type 66	14.59	$\times 1/\sqrt[1]{(1.5)+0.04} =$	20.65	(27)
Windows Type 67	14.59	$\times 1/\sqrt[1]{(1.5)+0.04} =$	20.65	(27)
Windows Type 68	2.06	$\times 1/\sqrt[1]{(1.5)+0.04} =$	2.92	(27)
Windows Type 69	2.06	$\times 1/\sqrt[1]{(1.5)+0.04} =$	2.92	(27)
Windows Type 70	11.5	$\times 1/\sqrt[1]{(1.5)+0.04} =$	16.27	(27)
Windows Type 71	27.9	$\times 1/\sqrt[1]{(1.5)+0.04} =$	39.48	(27)
Windows Type 72	7.16	$\times 1/\sqrt[1]{(1.5)+0.04} =$	10.13	(27)
Windows Type 73	7.16	$\times 1/\sqrt[1]{(1.5)+0.04} =$	10.13	(27)
Windows Type 74	37.7	$\times 1/\sqrt[1]{(1.5)+0.04} =$	53.35	(27)
Windows Type 75	2.6	$\times 1/\sqrt[1]{(1.5)+0.04} =$	3.68	(27)
Windows Type 76	1.39	$\times 1/\sqrt[1]{(1.5)+0.04} =$	1.97	(27)
Windows Type 77	4.62	$\times 1/\sqrt[1]{(1.5)+0.04} =$	6.54	(27)
Windows Type 78	3.91	$\times 1/\sqrt[1]{(1.5)+0.04} =$	5.53	(27)
Windows Type 79	1.39	$\times 1/\sqrt[1]{(1.5)+0.04} =$	1.97	(27)
Windows Type 80	1.79	$\times 1/\sqrt[1]{(1.5)+0.04} =$	2.53	(27)
Windows Type 81	1.65	$\times 1/\sqrt[1]{(1.5)+0.04} =$	2.33	(27)
Windows Type 82	2.56	$\times 1/\sqrt[1]{(1.5)+0.04} =$	3.62	(27)
Windows Type 83	1.57	$\times 1/\sqrt[1]{(1.5)+0.04} =$	2.22	(27)
Windows Type 84	1.06	$\times 1/\sqrt[1]{(1.5)+0.04} =$	1.5	(27)
Windows Type 85	1.94	$\times 1/\sqrt[1]{(1.5)+0.04} =$	2.75	(27)
Windows Type 86	18.59	$\times 1/\sqrt[1]{(1.5)+0.04} =$	26.31	(27)
Windows Type 87	17.88	$\times 1/\sqrt[1]{(1.5)+0.04} =$	25.3	(27)
Windows Type 88	18.59	$\times 1/\sqrt[1]{(1.5)+0.04} =$	26.31	(27)

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Windows Type 89			17.33	$\times 1/[1/(1.5)+0.04] =$	24.52			(27)		
Windows Type 90			1.81	$\times 1/[1/(1.5)+0.04] =$	2.56			(27)		
Windows Type 91			1.84	$\times 1/[1/(1.5)+0.04] =$	2.6			(27)		
Windows Type 92			11.6	$\times 1/[1/(4.8)+0.04] =$	46.71			(27)		
Windows Type 93			58.85	$\times 1/[1/(1.5)+0.04] =$	83.28			(27)		
Windows Type 94			1.4	$\times 1/[1/(1.5)+0.04] =$	1.98			(27)		
Windows Type 95			1.4	$\times 1/[1/(1.5)+0.04] =$	1.98			(27)		
Windows Type 96			2.16	$\times 1/[1/(1.5)+0.04] =$	3.06			(27)		
Windows Type 97			2.16	$\times 1/[1/(1.5)+0.04] =$	3.06			(27)		
Rooflights Type 1			3.14	$\times 1/[1/(1.5)+0.04] =$	4.71			(27b)		
Rooflights Type 2			28.56	$\times 1/[1/(1.5)+0.04] =$	42.84			(27b)		
Rooflights Type 3			13.81	$\times 1/[1/(1.5)+0.04] =$	20.715			(27b)		
Rooflights Type 4			8.42	$\times 1/[1/(1.5)+0.04] =$	12.63			(27b)		
Rooflights Type 5			2.25	$\times 1/[1/(1.5)+0.04] =$	3.375			(27b)		
Rooflights Type 6			3.45	$\times 1/[1/(1.5)+0.04] =$	5.175			(27b)		
Rooflights Type 7			2.35	$\times 1/[1/(1.5)+0.04] =$	3.525			(27b)		
Rooflights Type 8			6.6	$\times 1/[1/(1.5)+0.04] =$	9.9			(27b)		
Floor Type 1			179.2	$\times$	0.14	$=$	25.088			(28)
Floor Type 2			556.8	$\times$	0.15	$=$	83.52			(28)
Floor Type 3			10.8	$\times$	0.23	$=$	2.484			(28)
Floor Type 4			164.3	$\times$	0.15	$=$	24.645			(28)
Floor Type 5			416.4	$\times$	0.14	$=$	58.296			(28)
Walls Type1	173.71	0	173.71	$\times$	0.13	$=$	22.58			(29)
Walls Type2	1297.39	672.9	624.49	$\times$	0.28	$=$	174.86			(29)
Walls Type3	343.99	65.97	278.02	$\times$	0.18	$=$	50.04			(29)
Walls Type4	524	0	524	$\times$	0.22	$=$	115.28			(29)
Roof Type1	437.9	22.6	415.3	$\times$	0.13	$=$	53.99			(30)
Roof Type2	198.3	53.93	144.37	$\times$	0.16	$=$	23.1			(30)
Roof Type3	414.2	0	414.2	$\times$	0.15	$=$	62.13			(30)
Roof Type4	165.2	0	165.2	$\times$	0.14	$=$	23.13			(30)
Roof Type5	106.2	0	106.2	$\times$	0.16	$=$	16.99			(30)
Roof Type6	178	0	178	$\times$	0.16	$=$	28.48			(30)
Total area of elements, m²			5166.38							(31)

* for windows and roof windows, use effective window U-value calculated using formula $1/[(1/U\text{-value}) + 0.04]$ as given in paragraph 3.2

** include the areas on both sides of internal walls and partitions

Fabric heat loss, W/K = S (A x U)	(26)...(30) + (32) =	1948.51	(33)
Heat capacity Cm = S(A x k)	((28)...(30) + (32) + (32a)...(32e) =	0	(34)
Thermal mass parameter (TMP = Cm ÷ TFA) in kJ/m ² K	Indicative Value: Low	100	(35)

For design assessments where the details of the construction are not known precisely the indicative values of TMP in Table 1f can be used instead of a detailed calculation.

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Thermal bridges : S (L x Y) calculated using Appendix K

774.96 (36)

if details of thermal bridging are not known (36) = 0.05 x (31)

Total fabric heat loss

(33) + (36) =

2723.47 (37)

Ventilation heat loss calculated monthly

(38)m = 0.33 x (25)m x (5)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
(38)m=	3148.59	3088.87	3030.34	2755.39	2703.95	2464.49	2464.49	2420.14	2556.72	2703.95	2808.02	2916.81

(38)

Heat transfer coefficient, W/K

(39)m = (37) + (38)m

(39)m=	5872.06	5812.34	5753.81	5478.86	5427.42	5187.95	5187.95	5143.61	5280.19	5427.42	5531.49	5640.28
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Average = Sum(39)_{1...12} /12=

5478.62 (39)

Heat loss parameter (HLP), W/m²K

(40)m = (39)m ÷ (4)

(40)m=	2.44	2.42	2.39	2.28	2.26	2.16	2.16	2.14	2.19	2.26	2.3	2.34
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Average = Sum(40)_{1...12} /12=

2.28 (40)

Number of days in month (Table 1a)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
(41)m=	31	28	31	30	31	30	31	31	30	31	30	31

(41)

4. Water heating energy requirement:

kWh/year:

Assumed occupancy, N

if TFA > 13.9, N = 1 + 1.76 x [1 - exp(-0.000349 x (TFA -13.9)²)] + 0.0013 x (TFA -13.9)

if TFA ≤ 13.9, N = 1

5.87 (42)

Annual average hot water usage in litres per day Vd,average = (25 x N) + 36

173.61 (43)

Reduce the annual average hot water usage by 5% if the dwelling is designed to achieve a water use target of not more than 125 litres per person per day (all water use, hot and cold)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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Hot water usage in litres per day for each month Vd,m = factor from Table 1c x (43)

(44)m=	190.97	184.02	177.08	170.13	163.19	156.25	156.25	163.19	170.13	177.08	184.02	190.97
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Total = Sum(44)_{1...12} =

2083.27 (44)

Energy content of hot water used - calculated monthly = 4.190 x Vd,m x nm x DTm / 3600 kWh/month (see Tables 1b, 1c, 1d)

(45)m=	283.2	247.69	255.59	222.83	213.81	184.5	170.97	196.19	198.53	231.37	252.56	274.26
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Total = Sum(45)_{1...12} =

2731.5 (45)

If instantaneous water heating at point of use (no hot water storage), enter 0 in boxes (46) to (61)

(46)m=	42.48	37.15	38.34	33.42	32.07	27.68	25.65	29.43	29.78	34.71	37.88	41.14
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(46)

Water storage loss:

Storage volume (litres) including any solar or WWHRS storage within same vessel

2000 (47)

If community heating and no tank in dwelling, enter 110 litres in (47)

Otherwise if no stored hot water (this includes instantaneous combi boilers) enter '0' in (47)

Water storage loss:

a) If manufacturer's declared loss factor is known (kWh/day):

6.67 (48)

Temperature factor from Table 2b

0.6 (49)

Energy lost from water storage, kWh/year

(48) x (49) =

4 (50)

b) If manufacturer's declared cylinder loss factor is not known:

Hot water storage loss factor from Table 2 (kWh/litre/day)

0 (51)

If community heating see section 4.3

Volume factor from Table 2a

0 (52)

Temperature factor from Table 2b

0 (53)

SAP WorkSheet: New dwelling as built

Energy lost from water storage, kWh/year $(47) \times (51) \times (52) \times (53) =$

0
4

 (54)

Enter (50) or (54) in (55)

4

 (55)

Water storage loss calculated for each month $((56)m = (55) \times (41)m$

(56)m=

124.06	112.06	124.06	120.06	124.06	120.06	124.06	124.06	120.06	124.06	120.06	124.06
--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------

 (56)

If cylinder contains dedicated solar storage, $(57)m = (56)m \times [(50) - (H11)] \div (50)$, else $(57)m = (56)m$ where (H11) is from Appendix H

(57)m=

124.06	112.06	124.06	120.06	124.06	120.06	124.06	124.06	120.06	124.06	120.06	124.06
--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------

 (57)

Primary circuit loss (annual) from Table 3

0

 (58)

Primary circuit loss calculated for each month $(59)m = (58) \div 365 \times (41)m$

(modified by factor from Table H5 if there is solar water heating and a cylinder thermostat)

(59)m=

23.26	21.01	23.26	22.51	23.26	22.51	23.26	23.26	22.51	23.26	22.51	23.26
-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

 (59)

Combi loss calculated for each month $(61)m = (60) \div 365 \times (41)m$

(61)m=

0	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---

 (61)

Total heat required for water heating calculated for each month $(62)m = 0.85 \times (45)m + (46)m + (57)m + (59)m + (61)m$

(62)m=

430.52	380.75	402.92	365.4	361.14	327.07	318.29	343.51	341.1	378.69	395.13	421.59
--------	--------	--------	-------	--------	--------	--------	--------	-------	--------	--------	--------

 (62)

Solar DHW input calculated using Appendix G or Appendix H (negative quantity) (enter '0' if no solar contribution to water heating)

(add additional lines if FGHRs and/or WWHRs applies, see Appendix G)

(63)m=

0	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---

 (63)

Output from water heater

(64)m=

430.52	380.75	402.92	365.4	361.14	327.07	318.29	343.51	341.1	378.69	395.13	421.59
--------	--------	--------	-------	--------	--------	--------	--------	-------	--------	--------	--------

Output from water heater (annual) _{1...12}	4466.13
---	---------

 (64)

Heat gains from water heating, kWh/month $0.25 \times [0.85 \times (45)m + (61)m] + 0.8 \times [(46)m + (57)m + (59)m]$

(65)m=

212.02	188.81	202.84	188.15	188.95	175.4	174.71	183.09	180.07	194.79	198.03	209.05
--------	--------	--------	--------	--------	-------	--------	--------	--------	--------	--------	--------

 (65)

include (57)m in calculation of (65)m only if cylinder is in the dwelling or hot water is from community heating

5. Internal gains (see Table 5 and 5a):

Metabolic gains (Table 5), Watts

(66)m=

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
352.18	352.18	352.18	352.18	352.18	352.18	352.18	352.18	352.18	352.18	352.18	352.18

 (66)

Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5

(67)m=

366.45	325.47	264.69	200.39	149.79	126.46	136.65	177.62	238.4	302.7	353.3	376.63
--------	--------	--------	--------	--------	--------	--------	--------	-------	-------	-------	--------

 (67)

Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5

(68)m=

2453.97	2479.44	2415.27	2278.66	2106.21	1944.14	1835.86	1810.4	1874.57	2011.18	2183.62	2345.7
---------	---------	---------	---------	---------	---------	---------	--------	---------	---------	---------	--------

 (68)

Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5

(69)m=

76.09	76.09	76.09	76.09	76.09	76.09	76.09	76.09	76.09	76.09	76.09	76.09
-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

 (69)

Pumps and fans gains (Table 5a)

(70)m=

0	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---

 (70)

Losses e.g. evaporation (negative values) (Table 5)

(71)m=

-234.79	-234.79	-234.79	-234.79	-234.79	-234.79	-234.79	-234.79	-234.79	-234.79	-234.79	-234.79
---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------

 (71)

Water heating gains (Table 5)

(72)m=

284.98	280.97	272.64	261.32	253.97	243.62	234.82	246.09	250.1	261.81	275.05	280.98
--------	--------	--------	--------	--------	--------	--------	--------	-------	--------	--------	--------

 (72)

Total internal gains = $(66)m + (67)m + (68)m + (69)m + (70)m + (71)m + (72)m$

(73)m=

3298.88	3279.36	3146.08	2933.85	2703.46	2507.7	2400.81	2427.59	2556.55	2769.18	3005.45	3196.8
---------	---------	---------	---------	---------	--------	---------	---------	---------	---------	---------	--------

 (73)

6. Solar gains:

Solar gains are calculated using solar flux from Table 6a and associated equations to convert to the applicable orientation.

SAP WorkSheet: New dwelling as built

Orientation:	Access Factor Table 6d		Area m ²		Flux Table 6a		g_ Table 6b		FF Table 6c		Gains (W)	
North	0.9x	0.77	x	5.4	x	10.63	x	0.63	x	0.7	=	17.55 (74)
North	0.9x	0.77	x	1.84	x	10.63	x	0.63	x	0.7	=	17.94 (74)
North	0.9x	0.77	x	3.02	x	10.63	x	0.63	x	0.7	=	9.81 (74)
North	0.9x	0.77	x	2.06	x	10.63	x	0.63	x	0.7	=	6.69 (74)
North	0.9x	0.77	x	11.5	x	10.63	x	0.63	x	0.7	=	37.37 (74)
North	0.9x	0.77	x	7.16	x	10.63	x	0.63	x	0.7	=	46.54 (74)
North	0.9x	0.77	x	3.91	x	10.63	x	0.63	x	0.7	=	12.71 (74)
North	0.9x	0.77	x	1.79	x	10.63	x	0.63	x	0.7	=	17.45 (74)
North	0.9x	0.77	x	1.65	x	10.63	x	0.63	x	0.7	=	5.36 (74)
North	0.9x	0.77	x	2.56	x	10.63	x	0.63	x	0.7	=	24.96 (74)
North	0.9x	0.77	x	1.57	x	10.63	x	0.63	x	0.7	=	15.31 (74)
North	0.9x	0.77	x	1.06	x	10.63	x	0.63	x	0.7	=	6.89 (74)
North	0.9x	0.77	x	1.94	x	10.63	x	0.63	x	0.7	=	6.3 (74)
North	0.9x	0.77	x	11.6	x	10.63	x	0.85	x	0.7	=	50.86 (74)
North	0.9x	0.77	x	2.16	x	10.63	x	0.63	x	0.7	=	7.02 (74)
North	0.9x	0.77	x	5.4	x	20.32	x	0.63	x	0.7	=	33.54 (74)
North	0.9x	0.77	x	1.84	x	20.32	x	0.63	x	0.7	=	34.28 (74)
North	0.9x	0.77	x	3.02	x	20.32	x	0.63	x	0.7	=	18.76 (74)
North	0.9x	0.77	x	2.06	x	20.32	x	0.63	x	0.7	=	12.79 (74)
North	0.9x	0.77	x	11.5	x	20.32	x	0.63	x	0.7	=	71.42 (74)
North	0.9x	0.77	x	7.16	x	20.32	x	0.63	x	0.7	=	88.93 (74)
North	0.9x	0.77	x	3.91	x	20.32	x	0.63	x	0.7	=	24.28 (74)
North	0.9x	0.77	x	1.79	x	20.32	x	0.63	x	0.7	=	33.35 (74)
North	0.9x	0.77	x	1.65	x	20.32	x	0.63	x	0.7	=	10.25 (74)
North	0.9x	0.77	x	2.56	x	20.32	x	0.63	x	0.7	=	47.7 (74)
North	0.9x	0.77	x	1.57	x	20.32	x	0.63	x	0.7	=	29.25 (74)
North	0.9x	0.77	x	1.06	x	20.32	x	0.63	x	0.7	=	13.17 (74)
North	0.9x	0.77	x	1.94	x	20.32	x	0.63	x	0.7	=	12.05 (74)
North	0.9x	0.77	x	11.6	x	20.32	x	0.85	x	0.7	=	97.2 (74)
North	0.9x	0.77	x	2.16	x	20.32	x	0.63	x	0.7	=	13.41 (74)
North	0.9x	0.77	x	5.4	x	34.53	x	0.63	x	0.7	=	56.99 (74)
North	0.9x	0.77	x	1.84	x	34.53	x	0.63	x	0.7	=	58.25 (74)
North	0.9x	0.77	x	3.02	x	34.53	x	0.63	x	0.7	=	31.87 (74)
North	0.9x	0.77	x	2.06	x	34.53	x	0.63	x	0.7	=	21.74 (74)
North	0.9x	0.77	x	11.5	x	34.53	x	0.63	x	0.7	=	121.36 (74)
North	0.9x	0.77	x	7.16	x	34.53	x	0.63	x	0.7	=	151.12 (74)
North	0.9x	0.77	x	3.91	x	34.53	x	0.63	x	0.7	=	41.26 (74)
North	0.9x	0.77	x	1.79	x	34.53	x	0.63	x	0.7	=	56.67 (74)
North	0.9x	0.77	x	1.65	x	34.53	x	0.63	x	0.7	=	17.41 (74)

SAP WorkSheet: New dwelling as built

North	0.9x	0.77	x	2.56	x	34.53	x	0.63	x	0.7	=	81.05	(74)
North	0.9x	0.77	x	1.57	x	34.53	x	0.63	x	0.7	=	49.7	(74)
North	0.9x	0.77	x	1.06	x	34.53	x	0.63	x	0.7	=	22.37	(74)
North	0.9x	0.77	x	1.94	x	34.53	x	0.63	x	0.7	=	20.47	(74)
North	0.9x	0.77	x	11.6	x	34.53	x	0.85	x	0.7	=	165.16	(74)
North	0.9x	0.77	x	2.16	x	34.53	x	0.63	x	0.7	=	22.79	(74)
North	0.9x	0.77	x	5.4	x	55.46	x	0.63	x	0.7	=	91.53	(74)
North	0.9x	0.77	x	1.84	x	55.46	x	0.63	x	0.7	=	93.57	(74)
North	0.9x	0.77	x	3.02	x	55.46	x	0.63	x	0.7	=	51.19	(74)
North	0.9x	0.77	x	2.06	x	55.46	x	0.63	x	0.7	=	34.92	(74)
North	0.9x	0.77	x	11.5	x	55.46	x	0.63	x	0.7	=	194.93	(74)
North	0.9x	0.77	x	7.16	x	55.46	x	0.63	x	0.7	=	242.73	(74)
North	0.9x	0.77	x	3.91	x	55.46	x	0.63	x	0.7	=	66.28	(74)
North	0.9x	0.77	x	1.79	x	55.46	x	0.63	x	0.7	=	91.03	(74)
North	0.9x	0.77	x	1.65	x	55.46	x	0.63	x	0.7	=	27.97	(74)
North	0.9x	0.77	x	2.56	x	55.46	x	0.63	x	0.7	=	130.18	(74)
North	0.9x	0.77	x	1.57	x	55.46	x	0.63	x	0.7	=	79.84	(74)
North	0.9x	0.77	x	1.06	x	55.46	x	0.63	x	0.7	=	35.94	(74)
North	0.9x	0.77	x	1.94	x	55.46	x	0.63	x	0.7	=	32.88	(74)
North	0.9x	0.77	x	11.6	x	55.46	x	0.85	x	0.7	=	265.29	(74)
North	0.9x	0.77	x	2.16	x	55.46	x	0.63	x	0.7	=	36.61	(74)
North	0.9x	0.77	x	5.4	x	74.72	x	0.63	x	0.7	=	123.3	(74)
North	0.9x	0.77	x	1.84	x	74.72	x	0.63	x	0.7	=	126.04	(74)
North	0.9x	0.77	x	3.02	x	74.72	x	0.63	x	0.7	=	68.96	(74)
North	0.9x	0.77	x	2.06	x	74.72	x	0.63	x	0.7	=	47.04	(74)
North	0.9x	0.77	x	11.5	x	74.72	x	0.63	x	0.7	=	262.59	(74)
North	0.9x	0.77	x	7.16	x	74.72	x	0.63	x	0.7	=	326.98	(74)
North	0.9x	0.77	x	3.91	x	74.72	x	0.63	x	0.7	=	89.28	(74)
North	0.9x	0.77	x	1.79	x	74.72	x	0.63	x	0.7	=	122.62	(74)
North	0.9x	0.77	x	1.65	x	74.72	x	0.63	x	0.7	=	37.68	(74)
North	0.9x	0.77	x	2.56	x	74.72	x	0.63	x	0.7	=	175.37	(74)
North	0.9x	0.77	x	1.57	x	74.72	x	0.63	x	0.7	=	107.55	(74)
North	0.9x	0.77	x	1.06	x	74.72	x	0.63	x	0.7	=	48.41	(74)
North	0.9x	0.77	x	1.94	x	74.72	x	0.63	x	0.7	=	44.3	(74)
North	0.9x	0.77	x	11.6	x	74.72	x	0.85	x	0.7	=	357.37	(74)
North	0.9x	0.77	x	2.16	x	74.72	x	0.63	x	0.7	=	49.32	(74)
North	0.9x	0.77	x	5.4	x	79.99	x	0.63	x	0.7	=	132	(74)
North	0.9x	0.77	x	1.84	x	79.99	x	0.63	x	0.7	=	134.93	(74)
North	0.9x	0.77	x	3.02	x	79.99	x	0.63	x	0.7	=	73.82	(74)
North	0.9x	0.77	x	2.06	x	79.99	x	0.63	x	0.7	=	50.36	(74)
North	0.9x	0.77	x	11.5	x	79.99	x	0.63	x	0.7	=	281.11	(74)

SAP WorkSheet: New dwelling as built

North	0.9x	0.77	x	7.16	x	79.99	x	0.63	x	0.7	=	350.05	(74)
North	0.9x	0.77	x	3.91	x	79.99	x	0.63	x	0.7	=	95.58	(74)
North	0.9x	0.77	x	1.79	x	79.99	x	0.63	x	0.7	=	131.27	(74)
North	0.9x	0.77	x	1.65	x	79.99	x	0.63	x	0.7	=	40.33	(74)
North	0.9x	0.77	x	2.56	x	79.99	x	0.63	x	0.7	=	187.73	(74)
North	0.9x	0.77	x	1.57	x	79.99	x	0.63	x	0.7	=	115.13	(74)
North	0.9x	0.77	x	1.06	x	79.99	x	0.63	x	0.7	=	51.82	(74)
North	0.9x	0.77	x	1.94	x	79.99	x	0.63	x	0.7	=	47.42	(74)
North	0.9x	0.77	x	11.6	x	79.99	x	0.85	x	0.7	=	382.58	(74)
North	0.9x	0.77	x	2.16	x	79.99	x	0.63	x	0.7	=	52.8	(74)
North	0.9x	0.77	x	5.4	x	74.68	x	0.63	x	0.7	=	123.24	(74)
North	0.9x	0.77	x	1.84	x	74.68	x	0.63	x	0.7	=	125.98	(74)
North	0.9x	0.77	x	3.02	x	74.68	x	0.63	x	0.7	=	68.92	(74)
North	0.9x	0.77	x	2.06	x	74.68	x	0.63	x	0.7	=	47.01	(74)
North	0.9x	0.77	x	11.5	x	74.68	x	0.63	x	0.7	=	262.45	(74)
North	0.9x	0.77	x	7.16	x	74.68	x	0.63	x	0.7	=	326.81	(74)
North	0.9x	0.77	x	3.91	x	74.68	x	0.63	x	0.7	=	89.23	(74)
North	0.9x	0.77	x	1.79	x	74.68	x	0.63	x	0.7	=	122.55	(74)
North	0.9x	0.77	x	1.65	x	74.68	x	0.63	x	0.7	=	37.66	(74)
North	0.9x	0.77	x	2.56	x	74.68	x	0.63	x	0.7	=	175.27	(74)
North	0.9x	0.77	x	1.57	x	74.68	x	0.63	x	0.7	=	107.49	(74)
North	0.9x	0.77	x	1.06	x	74.68	x	0.63	x	0.7	=	48.38	(74)
North	0.9x	0.77	x	1.94	x	74.68	x	0.63	x	0.7	=	44.27	(74)
North	0.9x	0.77	x	11.6	x	74.68	x	0.85	x	0.7	=	357.18	(74)
North	0.9x	0.77	x	2.16	x	74.68	x	0.63	x	0.7	=	49.3	(74)
North	0.9x	0.77	x	5.4	x	59.25	x	0.63	x	0.7	=	97.77	(74)
North	0.9x	0.77	x	1.84	x	59.25	x	0.63	x	0.7	=	99.95	(74)
North	0.9x	0.77	x	3.02	x	59.25	x	0.63	x	0.7	=	54.68	(74)
North	0.9x	0.77	x	2.06	x	59.25	x	0.63	x	0.7	=	37.3	(74)
North	0.9x	0.77	x	11.5	x	59.25	x	0.63	x	0.7	=	208.22	(74)
North	0.9x	0.77	x	7.16	x	59.25	x	0.63	x	0.7	=	259.28	(74)
North	0.9x	0.77	x	3.91	x	59.25	x	0.63	x	0.7	=	70.8	(74)
North	0.9x	0.77	x	1.79	x	59.25	x	0.63	x	0.7	=	97.23	(74)
North	0.9x	0.77	x	1.65	x	59.25	x	0.63	x	0.7	=	29.88	(74)
North	0.9x	0.77	x	2.56	x	59.25	x	0.63	x	0.7	=	139.06	(74)
North	0.9x	0.77	x	1.57	x	59.25	x	0.63	x	0.7	=	85.28	(74)
North	0.9x	0.77	x	1.06	x	59.25	x	0.63	x	0.7	=	38.39	(74)
North	0.9x	0.77	x	1.94	x	59.25	x	0.63	x	0.7	=	35.13	(74)
North	0.9x	0.77	x	11.6	x	59.25	x	0.85	x	0.7	=	283.38	(74)
North	0.9x	0.77	x	2.16	x	59.25	x	0.63	x	0.7	=	39.11	(74)
North	0.9x	0.77	x	5.4	x	41.52	x	0.63	x	0.7	=	68.52	(74)

SAP WorkSheet: New dwelling as built

North	0.9x	0.77	x	1.84	x	41.52	x	0.63	x	0.7	=	70.04	(74)
North	0.9x	0.77	x	3.02	x	41.52	x	0.63	x	0.7	=	38.32	(74)
North	0.9x	0.77	x	2.06	x	41.52	x	0.63	x	0.7	=	26.14	(74)
North	0.9x	0.77	x	11.5	x	41.52	x	0.63	x	0.7	=	145.91	(74)
North	0.9x	0.77	x	7.16	x	41.52	x	0.63	x	0.7	=	181.69	(74)
North	0.9x	0.77	x	3.91	x	41.52	x	0.63	x	0.7	=	49.61	(74)
North	0.9x	0.77	x	1.79	x	41.52	x	0.63	x	0.7	=	68.13	(74)
North	0.9x	0.77	x	1.65	x	41.52	x	0.63	x	0.7	=	20.94	(74)
North	0.9x	0.77	x	2.56	x	41.52	x	0.63	x	0.7	=	97.44	(74)
North	0.9x	0.77	x	1.57	x	41.52	x	0.63	x	0.7	=	59.76	(74)
North	0.9x	0.77	x	1.06	x	41.52	x	0.63	x	0.7	=	26.9	(74)
North	0.9x	0.77	x	1.94	x	41.52	x	0.63	x	0.7	=	24.61	(74)
North	0.9x	0.77	x	11.6	x	41.52	x	0.85	x	0.7	=	198.58	(74)
North	0.9x	0.77	x	2.16	x	41.52	x	0.63	x	0.7	=	27.41	(74)
North	0.9x	0.77	x	5.4	x	24.19	x	0.63	x	0.7	=	39.92	(74)
North	0.9x	0.77	x	1.84	x	24.19	x	0.63	x	0.7	=	40.81	(74)
North	0.9x	0.77	x	3.02	x	24.19	x	0.63	x	0.7	=	22.33	(74)
North	0.9x	0.77	x	2.06	x	24.19	x	0.63	x	0.7	=	15.23	(74)
North	0.9x	0.77	x	11.5	x	24.19	x	0.63	x	0.7	=	85.01	(74)
North	0.9x	0.77	x	7.16	x	24.19	x	0.63	x	0.7	=	105.86	(74)
North	0.9x	0.77	x	3.91	x	24.19	x	0.63	x	0.7	=	28.91	(74)
North	0.9x	0.77	x	1.79	x	24.19	x	0.63	x	0.7	=	39.7	(74)
North	0.9x	0.77	x	1.65	x	24.19	x	0.63	x	0.7	=	12.2	(74)
North	0.9x	0.77	x	2.56	x	24.19	x	0.63	x	0.7	=	56.78	(74)
North	0.9x	0.77	x	1.57	x	24.19	x	0.63	x	0.7	=	34.82	(74)
North	0.9x	0.77	x	1.06	x	24.19	x	0.63	x	0.7	=	15.67	(74)
North	0.9x	0.77	x	1.94	x	24.19	x	0.63	x	0.7	=	14.34	(74)
North	0.9x	0.77	x	11.6	x	24.19	x	0.85	x	0.7	=	115.7	(74)
North	0.9x	0.77	x	2.16	x	24.19	x	0.63	x	0.7	=	15.97	(74)
North	0.9x	0.77	x	5.4	x	13.12	x	0.63	x	0.7	=	21.65	(74)
North	0.9x	0.77	x	1.84	x	13.12	x	0.63	x	0.7	=	22.13	(74)
North	0.9x	0.77	x	3.02	x	13.12	x	0.63	x	0.7	=	12.11	(74)
North	0.9x	0.77	x	2.06	x	13.12	x	0.63	x	0.7	=	8.26	(74)
North	0.9x	0.77	x	11.5	x	13.12	x	0.63	x	0.7	=	46.1	(74)
North	0.9x	0.77	x	7.16	x	13.12	x	0.63	x	0.7	=	57.41	(74)
North	0.9x	0.77	x	3.91	x	13.12	x	0.63	x	0.7	=	15.67	(74)
North	0.9x	0.77	x	1.79	x	13.12	x	0.63	x	0.7	=	21.53	(74)
North	0.9x	0.77	x	1.65	x	13.12	x	0.63	x	0.7	=	6.61	(74)
North	0.9x	0.77	x	2.56	x	13.12	x	0.63	x	0.7	=	30.79	(74)
North	0.9x	0.77	x	1.57	x	13.12	x	0.63	x	0.7	=	18.88	(74)
North	0.9x	0.77	x	1.06	x	13.12	x	0.63	x	0.7	=	8.5	(74)

SAP WorkSheet: New dwelling as built

North	0.9x	0.77	x	1.94	x	13.12	x	0.63	x	0.7	=	7.78	(74)
North	0.9x	0.77	x	11.6	x	13.12	x	0.85	x	0.7	=	62.74	(74)
North	0.9x	0.77	x	2.16	x	13.12	x	0.63	x	0.7	=	8.66	(74)
North	0.9x	0.77	x	5.4	x	8.86	x	0.63	x	0.7	=	14.63	(74)
North	0.9x	0.77	x	1.84	x	8.86	x	0.63	x	0.7	=	14.95	(74)
North	0.9x	0.77	x	3.02	x	8.86	x	0.63	x	0.7	=	8.18	(74)
North	0.9x	0.77	x	2.06	x	8.86	x	0.63	x	0.7	=	5.58	(74)
North	0.9x	0.77	x	11.5	x	8.86	x	0.63	x	0.7	=	31.15	(74)
North	0.9x	0.77	x	7.16	x	8.86	x	0.63	x	0.7	=	38.79	(74)
North	0.9x	0.77	x	3.91	x	8.86	x	0.63	x	0.7	=	10.59	(74)
North	0.9x	0.77	x	1.79	x	8.86	x	0.63	x	0.7	=	14.55	(74)
North	0.9x	0.77	x	1.65	x	8.86	x	0.63	x	0.7	=	4.47	(74)
North	0.9x	0.77	x	2.56	x	8.86	x	0.63	x	0.7	=	20.81	(74)
North	0.9x	0.77	x	1.57	x	8.86	x	0.63	x	0.7	=	12.76	(74)
North	0.9x	0.77	x	1.06	x	8.86	x	0.63	x	0.7	=	5.74	(74)
North	0.9x	0.77	x	1.94	x	8.86	x	0.63	x	0.7	=	5.26	(74)
North	0.9x	0.77	x	11.6	x	8.86	x	0.85	x	0.7	=	42.4	(74)
North	0.9x	0.77	x	2.16	x	8.86	x	0.63	x	0.7	=	5.85	(74)
Northeast	0.9x	0.77	x	1.24	x	11.28	x	0.63	x	0.7	=	4.28	(75)
Northeast	0.9x	0.77	x	1.24	x	22.97	x	0.63	x	0.7	=	8.7	(75)
Northeast	0.9x	0.77	x	1.24	x	41.38	x	0.63	x	0.7	=	15.68	(75)
Northeast	0.9x	0.77	x	1.24	x	67.96	x	0.63	x	0.7	=	25.75	(75)
Northeast	0.9x	0.77	x	1.24	x	91.35	x	0.63	x	0.7	=	34.62	(75)
Northeast	0.9x	0.77	x	1.24	x	97.38	x	0.63	x	0.7	=	36.9	(75)
Northeast	0.9x	0.77	x	1.24	x	91.1	x	0.63	x	0.7	=	34.52	(75)
Northeast	0.9x	0.77	x	1.24	x	72.63	x	0.63	x	0.7	=	27.52	(75)
Northeast	0.9x	0.77	x	1.24	x	50.42	x	0.63	x	0.7	=	19.11	(75)
Northeast	0.9x	0.77	x	1.24	x	28.07	x	0.63	x	0.7	=	10.64	(75)
Northeast	0.9x	0.77	x	1.24	x	14.2	x	0.63	x	0.7	=	5.38	(75)
Northeast	0.9x	0.77	x	1.24	x	9.21	x	0.63	x	0.7	=	3.49	(75)
East	0.9x	0.77	x	0.54	x	19.64	x	0.63	x	0.7	=	6.48	(76)
East	0.9x	0.77	x	1.99	x	19.64	x	0.63	x	0.7	=	11.94	(76)
East	0.9x	0.77	x	12.19	x	19.64	x	0.63	x	0.7	=	73.17	(76)
East	0.9x	0.77	x	9.75	x	19.64	x	0.63	x	0.7	=	58.52	(76)
East	0.9x	0.77	x	0.28	x	19.64	x	0.63	x	0.7	=	1.68	(76)
East	0.9x	0.77	x	1.65	x	19.64	x	0.63	x	0.7	=	19.81	(76)
East	0.9x	0.77	x	1.39	x	19.64	x	0.63	x	0.7	=	41.72	(76)
East	0.9x	0.77	x	7.35	x	19.64	x	0.63	x	0.7	=	88.23	(76)
East	0.9x	0.77	x	5.4	x	19.64	x	0.63	x	0.7	=	64.83	(76)
East	0.9x	0.77	x	3.04	x	19.64	x	0.63	x	0.7	=	18.25	(76)
East	0.9x	0.77	x	1.88	x	19.64	x	0.63	x	0.7	=	11.28	(76)

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East	0.9x	0.77	x	4.18	x	19.64	x	0.63	x	0.7	=	50.18	(76)
East	0.9x	0.77	x	1.84	x	19.64	x	0.63	x	0.7	=	33.13	(76)
East	0.9x	0.77	x	14.59	x	19.64	x	0.63	x	0.7	=	87.57	(76)
East	0.9x	0.77	x	27.9	x	19.64	x	0.63	x	0.7	=	167.46	(76)
East	0.9x	0.77	x	37.7	x	19.64	x	0.63	x	0.7	=	226.29	(76)
East	0.9x	0.77	x	1.39	x	19.64	x	0.63	x	0.7	=	25.03	(76)
East	0.9x	0.77	x	4.62	x	19.64	x	0.63	x	0.7	=	27.73	(76)
East	0.9x	0.77	x	18.59	x	19.64	x	0.63	x	0.7	=	111.58	(76)
East	0.9x	0.77	x	17.33	x	19.64	x	0.63	x	0.7	=	104.02	(76)
East	0.9x	0.77	x	1.4	x	19.64	x	0.63	x	0.7	=	8.4	(76)
East	0.9x	0.77	x	0.54	x	38.42	x	0.63	x	0.7	=	12.68	(76)
East	0.9x	0.77	x	1.99	x	38.42	x	0.63	x	0.7	=	23.37	(76)
East	0.9x	0.77	x	12.19	x	38.42	x	0.63	x	0.7	=	143.13	(76)
East	0.9x	0.77	x	9.75	x	38.42	x	0.63	x	0.7	=	114.48	(76)
East	0.9x	0.77	x	0.28	x	38.42	x	0.63	x	0.7	=	3.29	(76)
East	0.9x	0.77	x	1.65	x	38.42	x	0.63	x	0.7	=	38.75	(76)
East	0.9x	0.77	x	1.39	x	38.42	x	0.63	x	0.7	=	81.61	(76)
East	0.9x	0.77	x	7.35	x	38.42	x	0.63	x	0.7	=	172.6	(76)
East	0.9x	0.77	x	5.4	x	38.42	x	0.63	x	0.7	=	126.81	(76)
East	0.9x	0.77	x	3.04	x	38.42	x	0.63	x	0.7	=	35.7	(76)
East	0.9x	0.77	x	1.88	x	38.42	x	0.63	x	0.7	=	22.07	(76)
East	0.9x	0.77	x	4.18	x	38.42	x	0.63	x	0.7	=	98.16	(76)
East	0.9x	0.77	x	1.84	x	38.42	x	0.63	x	0.7	=	64.81	(76)
East	0.9x	0.77	x	14.59	x	38.42	x	0.63	x	0.7	=	171.31	(76)
East	0.9x	0.77	x	27.9	x	38.42	x	0.63	x	0.7	=	327.6	(76)
East	0.9x	0.77	x	37.7	x	38.42	x	0.63	x	0.7	=	442.67	(76)
East	0.9x	0.77	x	1.39	x	38.42	x	0.63	x	0.7	=	48.96	(76)
East	0.9x	0.77	x	4.62	x	38.42	x	0.63	x	0.7	=	54.25	(76)
East	0.9x	0.77	x	18.59	x	38.42	x	0.63	x	0.7	=	218.28	(76)
East	0.9x	0.77	x	17.33	x	38.42	x	0.63	x	0.7	=	203.49	(76)
East	0.9x	0.77	x	1.4	x	38.42	x	0.63	x	0.7	=	16.44	(76)
East	0.9x	0.77	x	0.54	x	63.27	x	0.63	x	0.7	=	20.88	(76)
East	0.9x	0.77	x	1.99	x	63.27	x	0.63	x	0.7	=	38.48	(76)
East	0.9x	0.77	x	12.19	x	63.27	x	0.63	x	0.7	=	235.72	(76)
East	0.9x	0.77	x	9.75	x	63.27	x	0.63	x	0.7	=	188.54	(76)
East	0.9x	0.77	x	0.28	x	63.27	x	0.63	x	0.7	=	5.41	(76)
East	0.9x	0.77	x	1.65	x	63.27	x	0.63	x	0.7	=	63.81	(76)
East	0.9x	0.77	x	1.39	x	63.27	x	0.63	x	0.7	=	134.39	(76)
East	0.9x	0.77	x	7.35	x	63.27	x	0.63	x	0.7	=	284.26	(76)
East	0.9x	0.77	x	5.4	x	63.27	x	0.63	x	0.7	=	208.84	(76)
East	0.9x	0.77	x	3.04	x	63.27	x	0.63	x	0.7	=	58.78	(76)

SAP WorkSheet: New dwelling as built

East	0.9x	0.77	x	1.88	x	63.27	x	0.63	x	0.7	=	36.35	(76)
East	0.9x	0.77	x	4.18	x	63.27	x	0.63	x	0.7	=	161.66	(76)
East	0.9x	0.77	x	1.84	x	63.27	x	0.63	x	0.7	=	106.74	(76)
East	0.9x	0.77	x	14.59	x	63.27	x	0.63	x	0.7	=	282.13	(76)
East	0.9x	0.77	x	27.9	x	63.27	x	0.63	x	0.7	=	539.5	(76)
East	0.9x	0.77	x	37.7	x	63.27	x	0.63	x	0.7	=	729.01	(76)
East	0.9x	0.77	x	1.39	x	63.27	x	0.63	x	0.7	=	80.64	(76)
East	0.9x	0.77	x	4.62	x	63.27	x	0.63	x	0.7	=	89.34	(76)
East	0.9x	0.77	x	18.59	x	63.27	x	0.63	x	0.7	=	359.48	(76)
East	0.9x	0.77	x	17.33	x	63.27	x	0.63	x	0.7	=	335.11	(76)
East	0.9x	0.77	x	1.4	x	63.27	x	0.63	x	0.7	=	27.07	(76)
East	0.9x	0.77	x	0.54	x	92.28	x	0.63	x	0.7	=	30.46	(76)
East	0.9x	0.77	x	1.99	x	92.28	x	0.63	x	0.7	=	56.12	(76)
East	0.9x	0.77	x	12.19	x	92.28	x	0.63	x	0.7	=	343.78	(76)
East	0.9x	0.77	x	9.75	x	92.28	x	0.63	x	0.7	=	274.97	(76)
East	0.9x	0.77	x	0.28	x	92.28	x	0.63	x	0.7	=	7.9	(76)
East	0.9x	0.77	x	1.65	x	92.28	x	0.63	x	0.7	=	93.07	(76)
East	0.9x	0.77	x	1.39	x	92.28	x	0.63	x	0.7	=	196	(76)
East	0.9x	0.77	x	7.35	x	92.28	x	0.63	x	0.7	=	414.57	(76)
East	0.9x	0.77	x	5.4	x	92.28	x	0.63	x	0.7	=	304.58	(76)
East	0.9x	0.77	x	3.04	x	92.28	x	0.63	x	0.7	=	85.73	(76)
East	0.9x	0.77	x	1.88	x	92.28	x	0.63	x	0.7	=	53.02	(76)
East	0.9x	0.77	x	4.18	x	92.28	x	0.63	x	0.7	=	235.77	(76)
East	0.9x	0.77	x	1.84	x	92.28	x	0.63	x	0.7	=	155.68	(76)
East	0.9x	0.77	x	14.59	x	92.28	x	0.63	x	0.7	=	411.47	(76)
East	0.9x	0.77	x	27.9	x	92.28	x	0.63	x	0.7	=	786.84	(76)
East	0.9x	0.77	x	37.7	x	92.28	x	0.63	x	0.7	=	1063.22	(76)
East	0.9x	0.77	x	1.39	x	92.28	x	0.63	x	0.7	=	117.6	(76)
East	0.9x	0.77	x	4.62	x	92.28	x	0.63	x	0.7	=	130.29	(76)
East	0.9x	0.77	x	18.59	x	92.28	x	0.63	x	0.7	=	524.28	(76)
East	0.9x	0.77	x	17.33	x	92.28	x	0.63	x	0.7	=	488.74	(76)
East	0.9x	0.77	x	1.4	x	92.28	x	0.63	x	0.7	=	39.48	(76)
East	0.9x	0.77	x	0.54	x	113.09	x	0.63	x	0.7	=	37.33	(76)
East	0.9x	0.77	x	1.99	x	113.09	x	0.63	x	0.7	=	68.78	(76)
East	0.9x	0.77	x	12.19	x	113.09	x	0.63	x	0.7	=	421.32	(76)
East	0.9x	0.77	x	9.75	x	113.09	x	0.63	x	0.7	=	336.99	(76)
East	0.9x	0.77	x	0.28	x	113.09	x	0.63	x	0.7	=	9.68	(76)
East	0.9x	0.77	x	1.65	x	113.09	x	0.63	x	0.7	=	114.06	(76)
East	0.9x	0.77	x	1.39	x	113.09	x	0.63	x	0.7	=	240.21	(76)
East	0.9x	0.77	x	7.35	x	113.09	x	0.63	x	0.7	=	508.07	(76)
East	0.9x	0.77	x	5.4	x	113.09	x	0.63	x	0.7	=	373.28	(76)

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East	0.9x	0.77	x	3.04	x	113.09	x	0.63	x	0.7	=	105.07	(76)
East	0.9x	0.77	x	1.88	x	113.09	x	0.63	x	0.7	=	64.98	(76)
East	0.9x	0.77	x	4.18	x	113.09	x	0.63	x	0.7	=	288.94	(76)
East	0.9x	0.77	x	1.84	x	113.09	x	0.63	x	0.7	=	190.79	(76)
East	0.9x	0.77	x	14.59	x	113.09	x	0.63	x	0.7	=	504.27	(76)
East	0.9x	0.77	x	27.9	x	113.09	x	0.63	x	0.7	=	964.3	(76)
East	0.9x	0.77	x	37.7	x	113.09	x	0.63	x	0.7	=	1303.01	(76)
East	0.9x	0.77	x	1.39	x	113.09	x	0.63	x	0.7	=	144.13	(76)
East	0.9x	0.77	x	4.62	x	113.09	x	0.63	x	0.7	=	159.68	(76)
East	0.9x	0.77	x	18.59	x	113.09	x	0.63	x	0.7	=	642.52	(76)
East	0.9x	0.77	x	17.33	x	113.09	x	0.63	x	0.7	=	598.97	(76)
East	0.9x	0.77	x	1.4	x	113.09	x	0.63	x	0.7	=	48.39	(76)
East	0.9x	0.77	x	0.54	x	115.77	x	0.63	x	0.7	=	38.21	(76)
East	0.9x	0.77	x	1.99	x	115.77	x	0.63	x	0.7	=	70.41	(76)
East	0.9x	0.77	x	12.19	x	115.77	x	0.63	x	0.7	=	431.29	(76)
East	0.9x	0.77	x	9.75	x	115.77	x	0.63	x	0.7	=	344.96	(76)
East	0.9x	0.77	x	0.28	x	115.77	x	0.63	x	0.7	=	9.91	(76)
East	0.9x	0.77	x	1.65	x	115.77	x	0.63	x	0.7	=	116.76	(76)
East	0.9x	0.77	x	1.39	x	115.77	x	0.63	x	0.7	=	245.9	(76)
East	0.9x	0.77	x	7.35	x	115.77	x	0.63	x	0.7	=	520.1	(76)
East	0.9x	0.77	x	5.4	x	115.77	x	0.63	x	0.7	=	382.11	(76)
East	0.9x	0.77	x	3.04	x	115.77	x	0.63	x	0.7	=	107.56	(76)
East	0.9x	0.77	x	1.88	x	115.77	x	0.63	x	0.7	=	66.52	(76)
East	0.9x	0.77	x	4.18	x	115.77	x	0.63	x	0.7	=	295.78	(76)
East	0.9x	0.77	x	1.84	x	115.77	x	0.63	x	0.7	=	195.3	(76)
East	0.9x	0.77	x	14.59	x	115.77	x	0.63	x	0.7	=	516.21	(76)
East	0.9x	0.77	x	27.9	x	115.77	x	0.63	x	0.7	=	987.13	(76)
East	0.9x	0.77	x	37.7	x	115.77	x	0.63	x	0.7	=	1333.86	(76)
East	0.9x	0.77	x	1.39	x	115.77	x	0.63	x	0.7	=	147.54	(76)
East	0.9x	0.77	x	4.62	x	115.77	x	0.63	x	0.7	=	163.46	(76)
East	0.9x	0.77	x	18.59	x	115.77	x	0.63	x	0.7	=	657.73	(76)
East	0.9x	0.77	x	17.33	x	115.77	x	0.63	x	0.7	=	613.15	(76)
East	0.9x	0.77	x	1.4	x	115.77	x	0.63	x	0.7	=	49.53	(76)
East	0.9x	0.77	x	0.54	x	110.22	x	0.63	x	0.7	=	36.38	(76)
East	0.9x	0.77	x	1.99	x	110.22	x	0.63	x	0.7	=	67.03	(76)
East	0.9x	0.77	x	12.19	x	110.22	x	0.63	x	0.7	=	410.61	(76)
East	0.9x	0.77	x	9.75	x	110.22	x	0.63	x	0.7	=	328.42	(76)
East	0.9x	0.77	x	0.28	x	110.22	x	0.63	x	0.7	=	9.43	(76)
East	0.9x	0.77	x	1.65	x	110.22	x	0.63	x	0.7	=	111.16	(76)
East	0.9x	0.77	x	1.39	x	110.22	x	0.63	x	0.7	=	234.1	(76)
East	0.9x	0.77	x	7.35	x	110.22	x	0.63	x	0.7	=	495.16	(76)

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East	0.9x	0.77	x	5.4	x	110.22	x	0.63	x	0.7	=	363.79	(76)
East	0.9x	0.77	x	3.04	x	110.22	x	0.63	x	0.7	=	102.4	(76)
East	0.9x	0.77	x	1.88	x	110.22	x	0.63	x	0.7	=	63.33	(76)
East	0.9x	0.77	x	4.18	x	110.22	x	0.63	x	0.7	=	281.6	(76)
East	0.9x	0.77	x	1.84	x	110.22	x	0.63	x	0.7	=	185.94	(76)
East	0.9x	0.77	x	14.59	x	110.22	x	0.63	x	0.7	=	491.45	(76)
East	0.9x	0.77	x	27.9	x	110.22	x	0.63	x	0.7	=	939.79	(76)
East	0.9x	0.77	x	37.7	x	110.22	x	0.63	x	0.7	=	1269.89	(76)
East	0.9x	0.77	x	1.39	x	110.22	x	0.63	x	0.7	=	140.46	(76)
East	0.9x	0.77	x	4.62	x	110.22	x	0.63	x	0.7	=	155.62	(76)
East	0.9x	0.77	x	18.59	x	110.22	x	0.63	x	0.7	=	626.19	(76)
East	0.9x	0.77	x	17.33	x	110.22	x	0.63	x	0.7	=	583.75	(76)
East	0.9x	0.77	x	1.4	x	110.22	x	0.63	x	0.7	=	47.16	(76)
East	0.9x	0.77	x	0.54	x	94.68	x	0.63	x	0.7	=	31.25	(76)
East	0.9x	0.77	x	1.99	x	94.68	x	0.63	x	0.7	=	57.58	(76)
East	0.9x	0.77	x	12.19	x	94.68	x	0.63	x	0.7	=	352.71	(76)
East	0.9x	0.77	x	9.75	x	94.68	x	0.63	x	0.7	=	282.11	(76)
East	0.9x	0.77	x	0.28	x	94.68	x	0.63	x	0.7	=	8.1	(76)
East	0.9x	0.77	x	1.65	x	94.68	x	0.63	x	0.7	=	95.48	(76)
East	0.9x	0.77	x	1.39	x	94.68	x	0.63	x	0.7	=	201.09	(76)
East	0.9x	0.77	x	7.35	x	94.68	x	0.63	x	0.7	=	425.33	(76)
East	0.9x	0.77	x	5.4	x	94.68	x	0.63	x	0.7	=	312.49	(76)
East	0.9x	0.77	x	3.04	x	94.68	x	0.63	x	0.7	=	87.96	(76)
East	0.9x	0.77	x	1.88	x	94.68	x	0.63	x	0.7	=	54.4	(76)
East	0.9x	0.77	x	4.18	x	94.68	x	0.63	x	0.7	=	241.89	(76)
East	0.9x	0.77	x	1.84	x	94.68	x	0.63	x	0.7	=	159.72	(76)
East	0.9x	0.77	x	14.59	x	94.68	x	0.63	x	0.7	=	422.15	(76)
East	0.9x	0.77	x	27.9	x	94.68	x	0.63	x	0.7	=	807.26	(76)
East	0.9x	0.77	x	37.7	x	94.68	x	0.63	x	0.7	=	1090.82	(76)
East	0.9x	0.77	x	1.39	x	94.68	x	0.63	x	0.7	=	120.66	(76)
East	0.9x	0.77	x	4.62	x	94.68	x	0.63	x	0.7	=	133.68	(76)
East	0.9x	0.77	x	18.59	x	94.68	x	0.63	x	0.7	=	537.89	(76)
East	0.9x	0.77	x	17.33	x	94.68	x	0.63	x	0.7	=	501.43	(76)
East	0.9x	0.77	x	1.4	x	94.68	x	0.63	x	0.7	=	40.51	(76)
East	0.9x	0.77	x	0.54	x	73.59	x	0.63	x	0.7	=	24.29	(76)
East	0.9x	0.77	x	1.99	x	73.59	x	0.63	x	0.7	=	44.75	(76)
East	0.9x	0.77	x	12.19	x	73.59	x	0.63	x	0.7	=	274.15	(76)
East	0.9x	0.77	x	9.75	x	73.59	x	0.63	x	0.7	=	219.28	(76)
East	0.9x	0.77	x	0.28	x	73.59	x	0.63	x	0.7	=	6.3	(76)
East	0.9x	0.77	x	1.65	x	73.59	x	0.63	x	0.7	=	74.22	(76)
East	0.9x	0.77	x	1.39	x	73.59	x	0.63	x	0.7	=	156.3	(76)

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East	0.9x	0.77	x	7.35	x	73.59	x	0.63	x	0.7	=	330.6	(76)
East	0.9x	0.77	x	5.4	x	73.59	x	0.63	x	0.7	=	242.89	(76)
East	0.9x	0.77	x	3.04	x	73.59	x	0.63	x	0.7	=	68.37	(76)
East	0.9x	0.77	x	1.88	x	73.59	x	0.63	x	0.7	=	42.28	(76)
East	0.9x	0.77	x	4.18	x	73.59	x	0.63	x	0.7	=	188.02	(76)
East	0.9x	0.77	x	1.84	x	73.59	x	0.63	x	0.7	=	124.14	(76)
East	0.9x	0.77	x	14.59	x	73.59	x	0.63	x	0.7	=	328.13	(76)
East	0.9x	0.77	x	27.9	x	73.59	x	0.63	x	0.7	=	627.47	(76)
East	0.9x	0.77	x	37.7	x	73.59	x	0.63	x	0.7	=	847.87	(76)
East	0.9x	0.77	x	1.39	x	73.59	x	0.63	x	0.7	=	93.78	(76)
East	0.9x	0.77	x	4.62	x	73.59	x	0.63	x	0.7	=	103.9	(76)
East	0.9x	0.77	x	18.59	x	73.59	x	0.63	x	0.7	=	418.09	(76)
East	0.9x	0.77	x	17.33	x	73.59	x	0.63	x	0.7	=	389.75	(76)
East	0.9x	0.77	x	1.4	x	73.59	x	0.63	x	0.7	=	31.49	(76)
East	0.9x	0.77	x	0.54	x	45.59	x	0.63	x	0.7	=	15.05	(76)
East	0.9x	0.77	x	1.99	x	45.59	x	0.63	x	0.7	=	27.73	(76)
East	0.9x	0.77	x	12.19	x	45.59	x	0.63	x	0.7	=	169.84	(76)
East	0.9x	0.77	x	9.75	x	45.59	x	0.63	x	0.7	=	135.84	(76)
East	0.9x	0.77	x	0.28	x	45.59	x	0.63	x	0.7	=	3.9	(76)
East	0.9x	0.77	x	1.65	x	45.59	x	0.63	x	0.7	=	45.98	(76)
East	0.9x	0.77	x	1.39	x	45.59	x	0.63	x	0.7	=	96.83	(76)
East	0.9x	0.77	x	7.35	x	45.59	x	0.63	x	0.7	=	204.81	(76)
East	0.9x	0.77	x	5.4	x	45.59	x	0.63	x	0.7	=	150.47	(76)
East	0.9x	0.77	x	3.04	x	45.59	x	0.63	x	0.7	=	42.36	(76)
East	0.9x	0.77	x	1.88	x	45.59	x	0.63	x	0.7	=	26.19	(76)
East	0.9x	0.77	x	4.18	x	45.59	x	0.63	x	0.7	=	116.48	(76)
East	0.9x	0.77	x	1.84	x	45.59	x	0.63	x	0.7	=	76.91	(76)
East	0.9x	0.77	x	14.59	x	45.59	x	0.63	x	0.7	=	203.28	(76)
East	0.9x	0.77	x	27.9	x	45.59	x	0.63	x	0.7	=	388.72	(76)
East	0.9x	0.77	x	37.7	x	45.59	x	0.63	x	0.7	=	525.26	(76)
East	0.9x	0.77	x	1.39	x	45.59	x	0.63	x	0.7	=	58.1	(76)
East	0.9x	0.77	x	4.62	x	45.59	x	0.63	x	0.7	=	64.37	(76)
East	0.9x	0.77	x	18.59	x	45.59	x	0.63	x	0.7	=	259.01	(76)
East	0.9x	0.77	x	17.33	x	45.59	x	0.63	x	0.7	=	241.45	(76)
East	0.9x	0.77	x	1.4	x	45.59	x	0.63	x	0.7	=	19.51	(76)
East	0.9x	0.77	x	0.54	x	24.49	x	0.63	x	0.7	=	8.08	(76)
East	0.9x	0.77	x	1.99	x	24.49	x	0.63	x	0.7	=	14.89	(76)
East	0.9x	0.77	x	12.19	x	24.49	x	0.63	x	0.7	=	91.23	(76)
East	0.9x	0.77	x	9.75	x	24.49	x	0.63	x	0.7	=	72.97	(76)
East	0.9x	0.77	x	0.28	x	24.49	x	0.63	x	0.7	=	2.1	(76)
East	0.9x	0.77	x	1.65	x	24.49	x	0.63	x	0.7	=	24.7	(76)

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East	0.9x	0.77	x	1.39	x	24.49	x	0.63	x	0.7	=	52.02	(76)
East	0.9x	0.77	x	7.35	x	24.49	x	0.63	x	0.7	=	110.02	(76)
East	0.9x	0.77	x	5.4	x	24.49	x	0.63	x	0.7	=	80.83	(76)
East	0.9x	0.77	x	3.04	x	24.49	x	0.63	x	0.7	=	22.75	(76)
East	0.9x	0.77	x	1.88	x	24.49	x	0.63	x	0.7	=	14.07	(76)
East	0.9x	0.77	x	4.18	x	24.49	x	0.63	x	0.7	=	62.57	(76)
East	0.9x	0.77	x	1.84	x	24.49	x	0.63	x	0.7	=	41.31	(76)
East	0.9x	0.77	x	14.59	x	24.49	x	0.63	x	0.7	=	109.19	(76)
East	0.9x	0.77	x	27.9	x	24.49	x	0.63	x	0.7	=	208.81	(76)
East	0.9x	0.77	x	37.7	x	24.49	x	0.63	x	0.7	=	282.15	(76)
East	0.9x	0.77	x	1.39	x	24.49	x	0.63	x	0.7	=	31.21	(76)
East	0.9x	0.77	x	4.62	x	24.49	x	0.63	x	0.7	=	34.58	(76)
East	0.9x	0.77	x	18.59	x	24.49	x	0.63	x	0.7	=	139.13	(76)
East	0.9x	0.77	x	17.33	x	24.49	x	0.63	x	0.7	=	129.7	(76)
East	0.9x	0.77	x	1.4	x	24.49	x	0.63	x	0.7	=	10.48	(76)
East	0.9x	0.77	x	0.54	x	16.15	x	0.63	x	0.7	=	5.33	(76)
East	0.9x	0.77	x	1.99	x	16.15	x	0.63	x	0.7	=	9.82	(76)
East	0.9x	0.77	x	12.19	x	16.15	x	0.63	x	0.7	=	60.17	(76)
East	0.9x	0.77	x	9.75	x	16.15	x	0.63	x	0.7	=	48.13	(76)
East	0.9x	0.77	x	0.28	x	16.15	x	0.63	x	0.7	=	1.38	(76)
East	0.9x	0.77	x	1.65	x	16.15	x	0.63	x	0.7	=	16.29	(76)
East	0.9x	0.77	x	1.39	x	16.15	x	0.63	x	0.7	=	34.31	(76)
East	0.9x	0.77	x	7.35	x	16.15	x	0.63	x	0.7	=	72.56	(76)
East	0.9x	0.77	x	5.4	x	16.15	x	0.63	x	0.7	=	53.31	(76)
East	0.9x	0.77	x	3.04	x	16.15	x	0.63	x	0.7	=	15.01	(76)
East	0.9x	0.77	x	1.88	x	16.15	x	0.63	x	0.7	=	9.28	(76)
East	0.9x	0.77	x	4.18	x	16.15	x	0.63	x	0.7	=	41.27	(76)
East	0.9x	0.77	x	1.84	x	16.15	x	0.63	x	0.7	=	27.25	(76)
East	0.9x	0.77	x	14.59	x	16.15	x	0.63	x	0.7	=	72.02	(76)
East	0.9x	0.77	x	27.9	x	16.15	x	0.63	x	0.7	=	137.71	(76)
East	0.9x	0.77	x	37.7	x	16.15	x	0.63	x	0.7	=	186.09	(76)
East	0.9x	0.77	x	1.39	x	16.15	x	0.63	x	0.7	=	20.58	(76)
East	0.9x	0.77	x	4.62	x	16.15	x	0.63	x	0.7	=	22.8	(76)
East	0.9x	0.77	x	18.59	x	16.15	x	0.63	x	0.7	=	91.76	(76)
East	0.9x	0.77	x	17.33	x	16.15	x	0.63	x	0.7	=	85.54	(76)
East	0.9x	0.77	x	1.4	x	16.15	x	0.63	x	0.7	=	6.91	(76)
Southeast	0.9x	0.77	x	1.24	x	36.79	x	0.63	x	0.7	=	13.94	(77)
Southeast	0.9x	0.77	x	2.76	x	36.79	x	0.63	x	0.7	=	31.04	(77)
Southeast	0.9x	0.77	x	2.83	x	36.79	x	0.63	x	0.7	=	31.82	(77)
Southeast	0.9x	0.77	x	2.16	x	36.79	x	0.63	x	0.7	=	24.29	(77)
Southeast	0.9x	0.77	x	1.23	x	36.79	x	0.63	x	0.7	=	13.83	(77)

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Southeast 0.9x	0.77	x	1.56	x	36.79	x	0.63	x	0.7	=	17.54	(77)
Southeast 0.9x	0.77	x	1.24	x	62.67	x	0.63	x	0.7	=	23.75	(77)
Southeast 0.9x	0.77	x	2.76	x	62.67	x	0.63	x	0.7	=	52.86	(77)
Southeast 0.9x	0.77	x	2.83	x	62.67	x	0.63	x	0.7	=	54.21	(77)
Southeast 0.9x	0.77	x	2.16	x	62.67	x	0.63	x	0.7	=	41.37	(77)
Southeast 0.9x	0.77	x	1.23	x	62.67	x	0.63	x	0.7	=	23.56	(77)
Southeast 0.9x	0.77	x	1.56	x	62.67	x	0.63	x	0.7	=	29.88	(77)
Southeast 0.9x	0.77	x	1.24	x	85.75	x	0.63	x	0.7	=	32.5	(77)
Southeast 0.9x	0.77	x	2.76	x	85.75	x	0.63	x	0.7	=	72.33	(77)
Southeast 0.9x	0.77	x	2.83	x	85.75	x	0.63	x	0.7	=	74.17	(77)
Southeast 0.9x	0.77	x	2.16	x	85.75	x	0.63	x	0.7	=	56.61	(77)
Southeast 0.9x	0.77	x	1.23	x	85.75	x	0.63	x	0.7	=	32.23	(77)
Southeast 0.9x	0.77	x	1.56	x	85.75	x	0.63	x	0.7	=	40.88	(77)
Southeast 0.9x	0.77	x	1.24	x	106.25	x	0.63	x	0.7	=	40.27	(77)
Southeast 0.9x	0.77	x	2.76	x	106.25	x	0.63	x	0.7	=	89.62	(77)
Southeast 0.9x	0.77	x	2.83	x	106.25	x	0.63	x	0.7	=	91.9	(77)
Southeast 0.9x	0.77	x	2.16	x	106.25	x	0.63	x	0.7	=	70.14	(77)
Southeast 0.9x	0.77	x	1.23	x	106.25	x	0.63	x	0.7	=	39.94	(77)
Southeast 0.9x	0.77	x	1.56	x	106.25	x	0.63	x	0.7	=	50.66	(77)
Southeast 0.9x	0.77	x	1.24	x	119.01	x	0.63	x	0.7	=	45.1	(77)
Southeast 0.9x	0.77	x	2.76	x	119.01	x	0.63	x	0.7	=	100.38	(77)
Southeast 0.9x	0.77	x	2.83	x	119.01	x	0.63	x	0.7	=	102.93	(77)
Southeast 0.9x	0.77	x	2.16	x	119.01	x	0.63	x	0.7	=	78.56	(77)
Southeast 0.9x	0.77	x	1.23	x	119.01	x	0.63	x	0.7	=	44.74	(77)
Southeast 0.9x	0.77	x	1.56	x	119.01	x	0.63	x	0.7	=	56.74	(77)
Southeast 0.9x	0.77	x	1.24	x	118.15	x	0.63	x	0.7	=	44.77	(77)
Southeast 0.9x	0.77	x	2.76	x	118.15	x	0.63	x	0.7	=	99.66	(77)
Southeast 0.9x	0.77	x	2.83	x	118.15	x	0.63	x	0.7	=	102.19	(77)
Southeast 0.9x	0.77	x	2.16	x	118.15	x	0.63	x	0.7	=	77.99	(77)
Southeast 0.9x	0.77	x	1.23	x	118.15	x	0.63	x	0.7	=	44.41	(77)
Southeast 0.9x	0.77	x	1.56	x	118.15	x	0.63	x	0.7	=	56.33	(77)
Southeast 0.9x	0.77	x	1.24	x	113.91	x	0.63	x	0.7	=	43.17	(77)
Southeast 0.9x	0.77	x	2.76	x	113.91	x	0.63	x	0.7	=	96.08	(77)
Southeast 0.9x	0.77	x	2.83	x	113.91	x	0.63	x	0.7	=	98.52	(77)
Southeast 0.9x	0.77	x	2.16	x	113.91	x	0.63	x	0.7	=	75.19	(77)
Southeast 0.9x	0.77	x	1.23	x	113.91	x	0.63	x	0.7	=	42.82	(77)
Southeast 0.9x	0.77	x	1.56	x	113.91	x	0.63	x	0.7	=	54.31	(77)
Southeast 0.9x	0.77	x	1.24	x	104.39	x	0.63	x	0.7	=	39.56	(77)
Southeast 0.9x	0.77	x	2.76	x	104.39	x	0.63	x	0.7	=	88.05	(77)
Southeast 0.9x	0.77	x	2.83	x	104.39	x	0.63	x	0.7	=	90.29	(77)
Southeast 0.9x	0.77	x	2.16	x	104.39	x	0.63	x	0.7	=	68.91	(77)

SAP WorkSheet: New dwelling as built

Southeast	0.9x	0.77	x	1.23	x	104.39	x	0.63	x	0.7	=	39.24	(77)
Southeast	0.9x	0.77	x	1.56	x	104.39	x	0.63	x	0.7	=	49.77	(77)
Southeast	0.9x	0.77	x	1.24	x	92.85	x	0.63	x	0.7	=	35.19	(77)
Southeast	0.9x	0.77	x	2.76	x	92.85	x	0.63	x	0.7	=	78.32	(77)
Southeast	0.9x	0.77	x	2.83	x	92.85	x	0.63	x	0.7	=	80.31	(77)
Southeast	0.9x	0.77	x	2.16	x	92.85	x	0.63	x	0.7	=	61.29	(77)
Southeast	0.9x	0.77	x	1.23	x	92.85	x	0.63	x	0.7	=	34.9	(77)
Southeast	0.9x	0.77	x	1.56	x	92.85	x	0.63	x	0.7	=	44.27	(77)
Southeast	0.9x	0.77	x	1.24	x	69.27	x	0.63	x	0.7	=	26.25	(77)
Southeast	0.9x	0.77	x	2.76	x	69.27	x	0.63	x	0.7	=	58.43	(77)
Southeast	0.9x	0.77	x	2.83	x	69.27	x	0.63	x	0.7	=	59.91	(77)
Southeast	0.9x	0.77	x	2.16	x	69.27	x	0.63	x	0.7	=	45.73	(77)
Southeast	0.9x	0.77	x	1.23	x	69.27	x	0.63	x	0.7	=	26.04	(77)
Southeast	0.9x	0.77	x	1.56	x	69.27	x	0.63	x	0.7	=	33.02	(77)
Southeast	0.9x	0.77	x	1.24	x	44.07	x	0.63	x	0.7	=	16.7	(77)
Southeast	0.9x	0.77	x	2.76	x	44.07	x	0.63	x	0.7	=	37.17	(77)
Southeast	0.9x	0.77	x	2.83	x	44.07	x	0.63	x	0.7	=	38.12	(77)
Southeast	0.9x	0.77	x	2.16	x	44.07	x	0.63	x	0.7	=	29.09	(77)
Southeast	0.9x	0.77	x	1.23	x	44.07	x	0.63	x	0.7	=	16.57	(77)
Southeast	0.9x	0.77	x	1.56	x	44.07	x	0.63	x	0.7	=	21.01	(77)
Southeast	0.9x	0.77	x	1.24	x	31.49	x	0.63	x	0.7	=	11.93	(77)
Southeast	0.9x	0.77	x	2.76	x	31.49	x	0.63	x	0.7	=	26.56	(77)
Southeast	0.9x	0.77	x	2.83	x	31.49	x	0.63	x	0.7	=	27.23	(77)
Southeast	0.9x	0.77	x	2.16	x	31.49	x	0.63	x	0.7	=	20.79	(77)
Southeast	0.9x	0.77	x	1.23	x	31.49	x	0.63	x	0.7	=	11.84	(77)
Southeast	0.9x	0.77	x	1.56	x	31.49	x	0.63	x	0.7	=	15.01	(77)
South	0.9x	0.77	x	5.4	x	46.75	x	0.63	x	0.7	=	77.16	(78)
South	0.9x	0.77	x	1.84	x	46.75	x	0.63	x	0.7	=	78.87	(78)
South	0.9x	0.77	x	9.75	x	46.75	x	0.63	x	0.7	=	139.31	(78)
South	0.9x	0.77	x	5.36	x	46.75	x	0.63	x	0.7	=	76.58	(78)
South	0.9x	0.77	x	3.95	x	46.75	x	0.63	x	0.7	=	56.44	(78)
South	0.9x	0.77	x	6.09	x	46.75	x	0.63	x	0.7	=	87.01	(78)
South	0.9x	0.77	x	4.33	x	46.75	x	0.63	x	0.7	=	61.87	(78)
South	0.9x	0.77	x	8.7	x	46.75	x	0.63	x	0.7	=	124.31	(78)
South	0.9x	0.77	x	1.23	x	46.75	x	0.63	x	0.7	=	17.57	(78)
South	0.9x	0.77	x	3.65	x	46.75	x	0.63	x	0.7	=	104.3	(78)
South	0.9x	0.77	x	1.92	x	46.75	x	0.63	x	0.7	=	27.43	(78)
South	0.9x	0.77	x	4.94	x	46.75	x	0.63	x	0.7	=	70.58	(78)
South	0.9x	0.77	x	3.12	x	46.75	x	0.63	x	0.7	=	44.58	(78)
South	0.9x	0.77	x	3.02	x	46.75	x	0.63	x	0.7	=	43.15	(78)
South	0.9x	0.77	x	2.06	x	46.75	x	0.63	x	0.7	=	29.43	(78)

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South	0.9x	0.77	x	7.16	x	46.75	x	0.63	x	0.7	=	102.3	(78)
South	0.9x	0.77	x	17.88	x	46.75	x	0.63	x	0.7	=	255.47	(78)
South	0.9x	0.77	x	1.84	x	46.75	x	0.63	x	0.7	=	26.29	(78)
South	0.9x	0.77	x	2.16	x	46.75	x	0.63	x	0.7	=	30.86	(78)
South	0.9x	0.77	x	5.4	x	76.57	x	0.63	x	0.7	=	126.36	(78)
South	0.9x	0.77	x	1.84	x	76.57	x	0.63	x	0.7	=	129.17	(78)
South	0.9x	0.77	x	9.75	x	76.57	x	0.63	x	0.7	=	228.15	(78)
South	0.9x	0.77	x	5.36	x	76.57	x	0.63	x	0.7	=	125.42	(78)
South	0.9x	0.77	x	3.95	x	76.57	x	0.63	x	0.7	=	92.43	(78)
South	0.9x	0.77	x	6.09	x	76.57	x	0.63	x	0.7	=	142.51	(78)
South	0.9x	0.77	x	4.33	x	76.57	x	0.63	x	0.7	=	101.32	(78)
South	0.9x	0.77	x	8.7	x	76.57	x	0.63	x	0.7	=	203.58	(78)
South	0.9x	0.77	x	1.23	x	76.57	x	0.63	x	0.7	=	28.78	(78)
South	0.9x	0.77	x	3.65	x	76.57	x	0.63	x	0.7	=	170.82	(78)
South	0.9x	0.77	x	1.92	x	76.57	x	0.63	x	0.7	=	44.93	(78)
South	0.9x	0.77	x	4.94	x	76.57	x	0.63	x	0.7	=	115.6	(78)
South	0.9x	0.77	x	3.12	x	76.57	x	0.63	x	0.7	=	73.01	(78)
South	0.9x	0.77	x	3.02	x	76.57	x	0.63	x	0.7	=	70.67	(78)
South	0.9x	0.77	x	2.06	x	76.57	x	0.63	x	0.7	=	48.2	(78)
South	0.9x	0.77	x	7.16	x	76.57	x	0.63	x	0.7	=	167.54	(78)
South	0.9x	0.77	x	17.88	x	76.57	x	0.63	x	0.7	=	418.39	(78)
South	0.9x	0.77	x	1.84	x	76.57	x	0.63	x	0.7	=	43.06	(78)
South	0.9x	0.77	x	2.16	x	76.57	x	0.63	x	0.7	=	50.54	(78)
South	0.9x	0.77	x	5.4	x	97.53	x	0.63	x	0.7	=	160.96	(78)
South	0.9x	0.77	x	1.84	x	97.53	x	0.63	x	0.7	=	164.54	(78)
South	0.9x	0.77	x	9.75	x	97.53	x	0.63	x	0.7	=	290.62	(78)
South	0.9x	0.77	x	5.36	x	97.53	x	0.63	x	0.7	=	159.77	(78)
South	0.9x	0.77	x	3.95	x	97.53	x	0.63	x	0.7	=	117.74	(78)
South	0.9x	0.77	x	6.09	x	97.53	x	0.63	x	0.7	=	181.53	(78)
South	0.9x	0.77	x	4.33	x	97.53	x	0.63	x	0.7	=	129.07	(78)
South	0.9x	0.77	x	8.7	x	97.53	x	0.63	x	0.7	=	259.33	(78)
South	0.9x	0.77	x	1.23	x	97.53	x	0.63	x	0.7	=	36.66	(78)
South	0.9x	0.77	x	3.65	x	97.53	x	0.63	x	0.7	=	217.6	(78)
South	0.9x	0.77	x	1.92	x	97.53	x	0.63	x	0.7	=	57.23	(78)
South	0.9x	0.77	x	4.94	x	97.53	x	0.63	x	0.7	=	147.25	(78)
South	0.9x	0.77	x	3.12	x	97.53	x	0.63	x	0.7	=	93	(78)
South	0.9x	0.77	x	3.02	x	97.53	x	0.63	x	0.7	=	90.02	(78)
South	0.9x	0.77	x	2.06	x	97.53	x	0.63	x	0.7	=	61.4	(78)
South	0.9x	0.77	x	7.16	x	97.53	x	0.63	x	0.7	=	213.42	(78)
South	0.9x	0.77	x	17.88	x	97.53	x	0.63	x	0.7	=	532.96	(78)
South	0.9x	0.77	x	1.84	x	97.53	x	0.63	x	0.7	=	54.85	(78)

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South	0.9x	0.77	x	2.16	x	97.53	x	0.63	x	0.7	=	64.38	(78)
South	0.9x	0.77	x	5.4	x	110.23	x	0.63	x	0.7	=	181.92	(78)
South	0.9x	0.77	x	1.84	x	110.23	x	0.63	x	0.7	=	185.96	(78)
South	0.9x	0.77	x	9.75	x	110.23	x	0.63	x	0.7	=	328.47	(78)
South	0.9x	0.77	x	5.36	x	110.23	x	0.63	x	0.7	=	180.57	(78)
South	0.9x	0.77	x	3.95	x	110.23	x	0.63	x	0.7	=	133.07	(78)
South	0.9x	0.77	x	6.09	x	110.23	x	0.63	x	0.7	=	205.17	(78)
South	0.9x	0.77	x	4.33	x	110.23	x	0.63	x	0.7	=	145.87	(78)
South	0.9x	0.77	x	8.7	x	110.23	x	0.63	x	0.7	=	293.09	(78)
South	0.9x	0.77	x	1.23	x	110.23	x	0.63	x	0.7	=	41.44	(78)
South	0.9x	0.77	x	3.65	x	110.23	x	0.63	x	0.7	=	245.93	(78)
South	0.9x	0.77	x	1.92	x	110.23	x	0.63	x	0.7	=	64.68	(78)
South	0.9x	0.77	x	4.94	x	110.23	x	0.63	x	0.7	=	166.42	(78)
South	0.9x	0.77	x	3.12	x	110.23	x	0.63	x	0.7	=	105.11	(78)
South	0.9x	0.77	x	3.02	x	110.23	x	0.63	x	0.7	=	101.74	(78)
South	0.9x	0.77	x	2.06	x	110.23	x	0.63	x	0.7	=	69.4	(78)
South	0.9x	0.77	x	7.16	x	110.23	x	0.63	x	0.7	=	241.21	(78)
South	0.9x	0.77	x	17.88	x	110.23	x	0.63	x	0.7	=	602.36	(78)
South	0.9x	0.77	x	1.84	x	110.23	x	0.63	x	0.7	=	61.99	(78)
South	0.9x	0.77	x	2.16	x	110.23	x	0.63	x	0.7	=	72.77	(78)
South	0.9x	0.77	x	5.4	x	114.87	x	0.63	x	0.7	=	189.57	(78)
South	0.9x	0.77	x	1.84	x	114.87	x	0.63	x	0.7	=	193.79	(78)
South	0.9x	0.77	x	9.75	x	114.87	x	0.63	x	0.7	=	342.28	(78)
South	0.9x	0.77	x	5.36	x	114.87	x	0.63	x	0.7	=	188.17	(78)
South	0.9x	0.77	x	3.95	x	114.87	x	0.63	x	0.7	=	138.67	(78)
South	0.9x	0.77	x	6.09	x	114.87	x	0.63	x	0.7	=	213.8	(78)
South	0.9x	0.77	x	4.33	x	114.87	x	0.63	x	0.7	=	152.01	(78)
South	0.9x	0.77	x	8.7	x	114.87	x	0.63	x	0.7	=	305.42	(78)
South	0.9x	0.77	x	1.23	x	114.87	x	0.63	x	0.7	=	43.18	(78)
South	0.9x	0.77	x	3.65	x	114.87	x	0.63	x	0.7	=	256.27	(78)
South	0.9x	0.77	x	1.92	x	114.87	x	0.63	x	0.7	=	67.4	(78)
South	0.9x	0.77	x	4.94	x	114.87	x	0.63	x	0.7	=	173.42	(78)
South	0.9x	0.77	x	3.12	x	114.87	x	0.63	x	0.7	=	109.53	(78)
South	0.9x	0.77	x	3.02	x	114.87	x	0.63	x	0.7	=	106.02	(78)
South	0.9x	0.77	x	2.06	x	114.87	x	0.63	x	0.7	=	72.32	(78)
South	0.9x	0.77	x	7.16	x	114.87	x	0.63	x	0.7	=	251.36	(78)
South	0.9x	0.77	x	17.88	x	114.87	x	0.63	x	0.7	=	627.7	(78)
South	0.9x	0.77	x	1.84	x	114.87	x	0.63	x	0.7	=	64.6	(78)
South	0.9x	0.77	x	2.16	x	114.87	x	0.63	x	0.7	=	75.83	(78)
South	0.9x	0.77	x	5.4	x	110.55	x	0.63	x	0.7	=	182.44	(78)
South	0.9x	0.77	x	1.84	x	110.55	x	0.63	x	0.7	=	186.49	(78)

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South	0.9x	0.77	x	9.75	x	110.55	x	0.63	x	0.7	=	329.4	(78)
South	0.9x	0.77	x	5.36	x	110.55	x	0.63	x	0.7	=	181.09	(78)
South	0.9x	0.77	x	3.95	x	110.55	x	0.63	x	0.7	=	133.45	(78)
South	0.9x	0.77	x	6.09	x	110.55	x	0.63	x	0.7	=	205.75	(78)
South	0.9x	0.77	x	4.33	x	110.55	x	0.63	x	0.7	=	146.29	(78)
South	0.9x	0.77	x	8.7	x	110.55	x	0.63	x	0.7	=	293.93	(78)
South	0.9x	0.77	x	1.23	x	110.55	x	0.63	x	0.7	=	41.56	(78)
South	0.9x	0.77	x	3.65	x	110.55	x	0.63	x	0.7	=	246.63	(78)
South	0.9x	0.77	x	1.92	x	110.55	x	0.63	x	0.7	=	64.87	(78)
South	0.9x	0.77	x	4.94	x	110.55	x	0.63	x	0.7	=	166.9	(78)
South	0.9x	0.77	x	3.12	x	110.55	x	0.63	x	0.7	=	105.41	(78)
South	0.9x	0.77	x	3.02	x	110.55	x	0.63	x	0.7	=	102.03	(78)
South	0.9x	0.77	x	2.06	x	110.55	x	0.63	x	0.7	=	69.6	(78)
South	0.9x	0.77	x	7.16	x	110.55	x	0.63	x	0.7	=	241.9	(78)
South	0.9x	0.77	x	17.88	x	110.55	x	0.63	x	0.7	=	604.07	(78)
South	0.9x	0.77	x	1.84	x	110.55	x	0.63	x	0.7	=	62.16	(78)
South	0.9x	0.77	x	2.16	x	110.55	x	0.63	x	0.7	=	72.98	(78)
South	0.9x	0.77	x	5.4	x	108.01	x	0.63	x	0.7	=	178.25	(78)
South	0.9x	0.77	x	1.84	x	108.01	x	0.63	x	0.7	=	182.21	(78)
South	0.9x	0.77	x	9.75	x	108.01	x	0.63	x	0.7	=	321.85	(78)
South	0.9x	0.77	x	5.36	x	108.01	x	0.63	x	0.7	=	176.93	(78)
South	0.9x	0.77	x	3.95	x	108.01	x	0.63	x	0.7	=	130.39	(78)
South	0.9x	0.77	x	6.09	x	108.01	x	0.63	x	0.7	=	201.03	(78)
South	0.9x	0.77	x	4.33	x	108.01	x	0.63	x	0.7	=	142.93	(78)
South	0.9x	0.77	x	8.7	x	108.01	x	0.63	x	0.7	=	287.19	(78)
South	0.9x	0.77	x	1.23	x	108.01	x	0.63	x	0.7	=	40.6	(78)
South	0.9x	0.77	x	3.65	x	108.01	x	0.63	x	0.7	=	240.97	(78)
South	0.9x	0.77	x	1.92	x	108.01	x	0.63	x	0.7	=	63.38	(78)
South	0.9x	0.77	x	4.94	x	108.01	x	0.63	x	0.7	=	163.07	(78)
South	0.9x	0.77	x	3.12	x	108.01	x	0.63	x	0.7	=	102.99	(78)
South	0.9x	0.77	x	3.02	x	108.01	x	0.63	x	0.7	=	99.69	(78)
South	0.9x	0.77	x	2.06	x	108.01	x	0.63	x	0.7	=	68	(78)
South	0.9x	0.77	x	7.16	x	108.01	x	0.63	x	0.7	=	236.35	(78)
South	0.9x	0.77	x	17.88	x	108.01	x	0.63	x	0.7	=	590.22	(78)
South	0.9x	0.77	x	1.84	x	108.01	x	0.63	x	0.7	=	60.74	(78)
South	0.9x	0.77	x	2.16	x	108.01	x	0.63	x	0.7	=	71.3	(78)
South	0.9x	0.77	x	5.4	x	104.89	x	0.63	x	0.7	=	173.11	(78)
South	0.9x	0.77	x	1.84	x	104.89	x	0.63	x	0.7	=	176.96	(78)
South	0.9x	0.77	x	9.75	x	104.89	x	0.63	x	0.7	=	312.56	(78)
South	0.9x	0.77	x	5.36	x	104.89	x	0.63	x	0.7	=	171.83	(78)
South	0.9x	0.77	x	3.95	x	104.89	x	0.63	x	0.7	=	126.63	(78)

SAP WorkSheet: New dwelling as built

South	0.9x	0.77	x	6.09	x	104.89	x	0.63	x	0.7	=	195.23	(78)
South	0.9x	0.77	x	4.33	x	104.89	x	0.63	x	0.7	=	138.81	(78)
South	0.9x	0.77	x	8.7	x	104.89	x	0.63	x	0.7	=	278.9	(78)
South	0.9x	0.77	x	1.23	x	104.89	x	0.63	x	0.7	=	39.43	(78)
South	0.9x	0.77	x	3.65	x	104.89	x	0.63	x	0.7	=	234.02	(78)
South	0.9x	0.77	x	1.92	x	104.89	x	0.63	x	0.7	=	61.55	(78)
South	0.9x	0.77	x	4.94	x	104.89	x	0.63	x	0.7	=	158.36	(78)
South	0.9x	0.77	x	3.12	x	104.89	x	0.63	x	0.7	=	100.02	(78)
South	0.9x	0.77	x	3.02	x	104.89	x	0.63	x	0.7	=	96.81	(78)
South	0.9x	0.77	x	2.06	x	104.89	x	0.63	x	0.7	=	66.04	(78)
South	0.9x	0.77	x	7.16	x	104.89	x	0.63	x	0.7	=	229.53	(78)
South	0.9x	0.77	x	17.88	x	104.89	x	0.63	x	0.7	=	573.18	(78)
South	0.9x	0.77	x	1.84	x	104.89	x	0.63	x	0.7	=	58.99	(78)
South	0.9x	0.77	x	2.16	x	104.89	x	0.63	x	0.7	=	69.24	(78)
South	0.9x	0.77	x	5.4	x	101.89	x	0.63	x	0.7	=	168.14	(78)
South	0.9x	0.77	x	1.84	x	101.89	x	0.63	x	0.7	=	171.88	(78)
South	0.9x	0.77	x	9.75	x	101.89	x	0.63	x	0.7	=	303.59	(78)
South	0.9x	0.77	x	5.36	x	101.89	x	0.63	x	0.7	=	166.9	(78)
South	0.9x	0.77	x	3.95	x	101.89	x	0.63	x	0.7	=	122.99	(78)
South	0.9x	0.77	x	6.09	x	101.89	x	0.63	x	0.7	=	189.63	(78)
South	0.9x	0.77	x	4.33	x	101.89	x	0.63	x	0.7	=	134.83	(78)
South	0.9x	0.77	x	8.7	x	101.89	x	0.63	x	0.7	=	270.9	(78)
South	0.9x	0.77	x	1.23	x	101.89	x	0.63	x	0.7	=	38.3	(78)
South	0.9x	0.77	x	3.65	x	101.89	x	0.63	x	0.7	=	227.3	(78)
South	0.9x	0.77	x	1.92	x	101.89	x	0.63	x	0.7	=	59.78	(78)
South	0.9x	0.77	x	4.94	x	101.89	x	0.63	x	0.7	=	153.82	(78)
South	0.9x	0.77	x	3.12	x	101.89	x	0.63	x	0.7	=	97.15	(78)
South	0.9x	0.77	x	3.02	x	101.89	x	0.63	x	0.7	=	94.04	(78)
South	0.9x	0.77	x	2.06	x	101.89	x	0.63	x	0.7	=	64.14	(78)
South	0.9x	0.77	x	7.16	x	101.89	x	0.63	x	0.7	=	222.94	(78)
South	0.9x	0.77	x	17.88	x	101.89	x	0.63	x	0.7	=	556.74	(78)
South	0.9x	0.77	x	1.84	x	101.89	x	0.63	x	0.7	=	57.29	(78)
South	0.9x	0.77	x	2.16	x	101.89	x	0.63	x	0.7	=	67.26	(78)
South	0.9x	0.77	x	5.4	x	82.59	x	0.63	x	0.7	=	136.29	(78)
South	0.9x	0.77	x	1.84	x	82.59	x	0.63	x	0.7	=	139.32	(78)
South	0.9x	0.77	x	9.75	x	82.59	x	0.63	x	0.7	=	246.08	(78)
South	0.9x	0.77	x	5.36	x	82.59	x	0.63	x	0.7	=	135.28	(78)
South	0.9x	0.77	x	3.95	x	82.59	x	0.63	x	0.7	=	99.69	(78)
South	0.9x	0.77	x	6.09	x	82.59	x	0.63	x	0.7	=	153.71	(78)
South	0.9x	0.77	x	4.33	x	82.59	x	0.63	x	0.7	=	109.29	(78)
South	0.9x	0.77	x	8.7	x	82.59	x	0.63	x	0.7	=	219.58	(78)

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South	0.9x	0.77	x	1.23	x	82.59	x	0.63	x	0.7	=	31.04	(78)
South	0.9x	0.77	x	3.65	x	82.59	x	0.63	x	0.7	=	184.25	(78)
South	0.9x	0.77	x	1.92	x	82.59	x	0.63	x	0.7	=	48.46	(78)
South	0.9x	0.77	x	4.94	x	82.59	x	0.63	x	0.7	=	124.68	(78)
South	0.9x	0.77	x	3.12	x	82.59	x	0.63	x	0.7	=	78.75	(78)
South	0.9x	0.77	x	3.02	x	82.59	x	0.63	x	0.7	=	76.22	(78)
South	0.9x	0.77	x	2.06	x	82.59	x	0.63	x	0.7	=	51.99	(78)
South	0.9x	0.77	x	7.16	x	82.59	x	0.63	x	0.7	=	180.71	(78)
South	0.9x	0.77	x	17.88	x	82.59	x	0.63	x	0.7	=	451.28	(78)
South	0.9x	0.77	x	1.84	x	82.59	x	0.63	x	0.7	=	46.44	(78)
South	0.9x	0.77	x	2.16	x	82.59	x	0.63	x	0.7	=	54.52	(78)
South	0.9x	0.77	x	5.4	x	55.42	x	0.63	x	0.7	=	91.46	(78)
South	0.9x	0.77	x	1.84	x	55.42	x	0.63	x	0.7	=	93.49	(78)
South	0.9x	0.77	x	9.75	x	55.42	x	0.63	x	0.7	=	165.13	(78)
South	0.9x	0.77	x	5.36	x	55.42	x	0.63	x	0.7	=	90.78	(78)
South	0.9x	0.77	x	3.95	x	55.42	x	0.63	x	0.7	=	66.9	(78)
South	0.9x	0.77	x	6.09	x	55.42	x	0.63	x	0.7	=	103.14	(78)
South	0.9x	0.77	x	4.33	x	55.42	x	0.63	x	0.7	=	73.33	(78)
South	0.9x	0.77	x	8.7	x	55.42	x	0.63	x	0.7	=	147.34	(78)
South	0.9x	0.77	x	1.23	x	55.42	x	0.63	x	0.7	=	20.83	(78)
South	0.9x	0.77	x	3.65	x	55.42	x	0.63	x	0.7	=	123.63	(78)
South	0.9x	0.77	x	1.92	x	55.42	x	0.63	x	0.7	=	32.52	(78)
South	0.9x	0.77	x	4.94	x	55.42	x	0.63	x	0.7	=	83.66	(78)
South	0.9x	0.77	x	3.12	x	55.42	x	0.63	x	0.7	=	52.84	(78)
South	0.9x	0.77	x	3.02	x	55.42	x	0.63	x	0.7	=	51.15	(78)
South	0.9x	0.77	x	2.06	x	55.42	x	0.63	x	0.7	=	34.89	(78)
South	0.9x	0.77	x	7.16	x	55.42	x	0.63	x	0.7	=	121.26	(78)
South	0.9x	0.77	x	17.88	x	55.42	x	0.63	x	0.7	=	302.82	(78)
South	0.9x	0.77	x	1.84	x	55.42	x	0.63	x	0.7	=	31.16	(78)
South	0.9x	0.77	x	2.16	x	55.42	x	0.63	x	0.7	=	36.58	(78)
South	0.9x	0.77	x	5.4	x	40.4	x	0.63	x	0.7	=	66.67	(78)
South	0.9x	0.77	x	1.84	x	40.4	x	0.63	x	0.7	=	68.15	(78)
South	0.9x	0.77	x	9.75	x	40.4	x	0.63	x	0.7	=	120.38	(78)
South	0.9x	0.77	x	5.36	x	40.4	x	0.63	x	0.7	=	66.18	(78)
South	0.9x	0.77	x	3.95	x	40.4	x	0.63	x	0.7	=	48.77	(78)
South	0.9x	0.77	x	6.09	x	40.4	x	0.63	x	0.7	=	75.19	(78)
South	0.9x	0.77	x	4.33	x	40.4	x	0.63	x	0.7	=	53.46	(78)
South	0.9x	0.77	x	8.7	x	40.4	x	0.63	x	0.7	=	107.41	(78)
South	0.9x	0.77	x	1.23	x	40.4	x	0.63	x	0.7	=	15.19	(78)
South	0.9x	0.77	x	3.65	x	40.4	x	0.63	x	0.7	=	90.13	(78)
South	0.9x	0.77	x	1.92	x	40.4	x	0.63	x	0.7	=	23.7	(78)

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South	0.9x	0.77	x	4.94	x	40.4	x	0.63	x	0.7	=	60.99	(78)
South	0.9x	0.77	x	3.12	x	40.4	x	0.63	x	0.7	=	38.52	(78)
South	0.9x	0.77	x	3.02	x	40.4	x	0.63	x	0.7	=	37.29	(78)
South	0.9x	0.77	x	2.06	x	40.4	x	0.63	x	0.7	=	25.43	(78)
South	0.9x	0.77	x	7.16	x	40.4	x	0.63	x	0.7	=	88.4	(78)
South	0.9x	0.77	x	17.88	x	40.4	x	0.63	x	0.7	=	220.75	(78)
South	0.9x	0.77	x	1.84	x	40.4	x	0.63	x	0.7	=	22.72	(78)
South	0.9x	0.77	x	2.16	x	40.4	x	0.63	x	0.7	=	26.67	(78)
Southwest	0.9x	0.77	x	2.76	x	36.79		0.63	x	0.7	=	31.04	(79)
Southwest	0.9x	0.77	x	2.83	x	36.79		0.63	x	0.7	=	31.82	(79)
Southwest	0.9x	0.77	x	2.16	x	36.79		0.63	x	0.7	=	24.29	(79)
Southwest	0.9x	0.77	x	1.23	x	36.79		0.63	x	0.7	=	13.83	(79)
Southwest	0.9x	0.77	x	1.56	x	36.79		0.63	x	0.7	=	17.54	(79)
Southwest	0.9x	0.77	x	1.95	x	36.79		0.63	x	0.7	=	21.93	(79)
Southwest	0.9x	0.77	x	1.47	x	36.79		0.63	x	0.7	=	16.53	(79)
Southwest	0.9x	0.77	x	2.76	x	62.67		0.63	x	0.7	=	52.86	(79)
Southwest	0.9x	0.77	x	2.83	x	62.67		0.63	x	0.7	=	54.21	(79)
Southwest	0.9x	0.77	x	2.16	x	62.67		0.63	x	0.7	=	41.37	(79)
Southwest	0.9x	0.77	x	1.23	x	62.67		0.63	x	0.7	=	23.56	(79)
Southwest	0.9x	0.77	x	1.56	x	62.67		0.63	x	0.7	=	29.88	(79)
Southwest	0.9x	0.77	x	1.95	x	62.67		0.63	x	0.7	=	37.35	(79)
Southwest	0.9x	0.77	x	1.47	x	62.67		0.63	x	0.7	=	28.16	(79)
Southwest	0.9x	0.77	x	2.76	x	85.75		0.63	x	0.7	=	72.33	(79)
Southwest	0.9x	0.77	x	2.83	x	85.75		0.63	x	0.7	=	74.17	(79)
Southwest	0.9x	0.77	x	2.16	x	85.75		0.63	x	0.7	=	56.61	(79)
Southwest	0.9x	0.77	x	1.23	x	85.75		0.63	x	0.7	=	32.23	(79)
Southwest	0.9x	0.77	x	1.56	x	85.75		0.63	x	0.7	=	40.88	(79)
Southwest	0.9x	0.77	x	1.95	x	85.75		0.63	x	0.7	=	51.1	(79)
Southwest	0.9x	0.77	x	1.47	x	85.75		0.63	x	0.7	=	38.52	(79)
Southwest	0.9x	0.77	x	2.76	x	106.25		0.63	x	0.7	=	89.62	(79)
Southwest	0.9x	0.77	x	2.83	x	106.25		0.63	x	0.7	=	91.9	(79)
Southwest	0.9x	0.77	x	2.16	x	106.25		0.63	x	0.7	=	70.14	(79)
Southwest	0.9x	0.77	x	1.23	x	106.25		0.63	x	0.7	=	39.94	(79)
Southwest	0.9x	0.77	x	1.56	x	106.25		0.63	x	0.7	=	50.66	(79)
Southwest	0.9x	0.77	x	1.95	x	106.25		0.63	x	0.7	=	63.32	(79)
Southwest	0.9x	0.77	x	1.47	x	106.25		0.63	x	0.7	=	47.73	(79)
Southwest	0.9x	0.77	x	2.76	x	119.01		0.63	x	0.7	=	100.38	(79)
Southwest	0.9x	0.77	x	2.83	x	119.01		0.63	x	0.7	=	102.93	(79)
Southwest	0.9x	0.77	x	2.16	x	119.01		0.63	x	0.7	=	78.56	(79)
Southwest	0.9x	0.77	x	1.23	x	119.01		0.63	x	0.7	=	44.74	(79)
Southwest	0.9x	0.77	x	1.56	x	119.01		0.63	x	0.7	=	56.74	(79)

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Southwest0.9x	0.77	x	1.95	x	119.01	0.63	x	0.7	=	70.92	(79)
Southwest0.9x	0.77	x	1.47	x	119.01	0.63	x	0.7	=	53.47	(79)
Southwest0.9x	0.77	x	2.76	x	118.15	0.63	x	0.7	=	99.66	(79)
Southwest0.9x	0.77	x	2.83	x	118.15	0.63	x	0.7	=	102.19	(79)
Southwest0.9x	0.77	x	2.16	x	118.15	0.63	x	0.7	=	77.99	(79)
Southwest0.9x	0.77	x	1.23	x	118.15	0.63	x	0.7	=	44.41	(79)
Southwest0.9x	0.77	x	1.56	x	118.15	0.63	x	0.7	=	56.33	(79)
Southwest0.9x	0.77	x	1.95	x	118.15	0.63	x	0.7	=	70.41	(79)
Southwest0.9x	0.77	x	1.47	x	118.15	0.63	x	0.7	=	53.08	(79)
Southwest0.9x	0.77	x	2.76	x	113.91	0.63	x	0.7	=	96.08	(79)
Southwest0.9x	0.77	x	2.83	x	113.91	0.63	x	0.7	=	98.52	(79)
Southwest0.9x	0.77	x	2.16	x	113.91	0.63	x	0.7	=	75.19	(79)
Southwest0.9x	0.77	x	1.23	x	113.91	0.63	x	0.7	=	42.82	(79)
Southwest0.9x	0.77	x	1.56	x	113.91	0.63	x	0.7	=	54.31	(79)
Southwest0.9x	0.77	x	1.95	x	113.91	0.63	x	0.7	=	67.88	(79)
Southwest0.9x	0.77	x	1.47	x	113.91	0.63	x	0.7	=	51.17	(79)
Southwest0.9x	0.77	x	2.76	x	104.39	0.63	x	0.7	=	88.05	(79)
Southwest0.9x	0.77	x	2.83	x	104.39	0.63	x	0.7	=	90.29	(79)
Southwest0.9x	0.77	x	2.16	x	104.39	0.63	x	0.7	=	68.91	(79)
Southwest0.9x	0.77	x	1.23	x	104.39	0.63	x	0.7	=	39.24	(79)
Southwest0.9x	0.77	x	1.56	x	104.39	0.63	x	0.7	=	49.77	(79)
Southwest0.9x	0.77	x	1.95	x	104.39	0.63	x	0.7	=	62.21	(79)
Southwest0.9x	0.77	x	1.47	x	104.39	0.63	x	0.7	=	46.9	(79)
Southwest0.9x	0.77	x	2.76	x	92.85	0.63	x	0.7	=	78.32	(79)
Southwest0.9x	0.77	x	2.83	x	92.85	0.63	x	0.7	=	80.31	(79)
Southwest0.9x	0.77	x	2.16	x	92.85	0.63	x	0.7	=	61.29	(79)
Southwest0.9x	0.77	x	1.23	x	92.85	0.63	x	0.7	=	34.9	(79)
Southwest0.9x	0.77	x	1.56	x	92.85	0.63	x	0.7	=	44.27	(79)
Southwest0.9x	0.77	x	1.95	x	92.85	0.63	x	0.7	=	55.33	(79)
Southwest0.9x	0.77	x	1.47	x	92.85	0.63	x	0.7	=	41.71	(79)
Southwest0.9x	0.77	x	2.76	x	69.27	0.63	x	0.7	=	58.43	(79)
Southwest0.9x	0.77	x	2.83	x	69.27	0.63	x	0.7	=	59.91	(79)
Southwest0.9x	0.77	x	2.16	x	69.27	0.63	x	0.7	=	45.73	(79)
Southwest0.9x	0.77	x	1.23	x	69.27	0.63	x	0.7	=	26.04	(79)
Southwest0.9x	0.77	x	1.56	x	69.27	0.63	x	0.7	=	33.02	(79)
Southwest0.9x	0.77	x	1.95	x	69.27	0.63	x	0.7	=	41.28	(79)
Southwest0.9x	0.77	x	1.47	x	69.27	0.63	x	0.7	=	31.12	(79)
Southwest0.9x	0.77	x	2.76	x	44.07	0.63	x	0.7	=	37.17	(79)
Southwest0.9x	0.77	x	2.83	x	44.07	0.63	x	0.7	=	38.12	(79)
Southwest0.9x	0.77	x	2.16	x	44.07	0.63	x	0.7	=	29.09	(79)
Southwest0.9x	0.77	x	1.23	x	44.07	0.63	x	0.7	=	16.57	(79)

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Southwest	0.9x	0.77	x	1.56	x	44.07		0.63	x	0.7	=	21.01	(79)
Southwest	0.9x	0.77	x	1.95	x	44.07		0.63	x	0.7	=	26.26	(79)
Southwest	0.9x	0.77	x	1.47	x	44.07		0.63	x	0.7	=	19.8	(79)
Southwest	0.9x	0.77	x	2.76	x	31.49		0.63	x	0.7	=	26.56	(79)
Southwest	0.9x	0.77	x	2.83	x	31.49		0.63	x	0.7	=	27.23	(79)
Southwest	0.9x	0.77	x	2.16	x	31.49		0.63	x	0.7	=	20.79	(79)
Southwest	0.9x	0.77	x	1.23	x	31.49		0.63	x	0.7	=	11.84	(79)
Southwest	0.9x	0.77	x	1.56	x	31.49		0.63	x	0.7	=	15.01	(79)
Southwest	0.9x	0.77	x	1.95	x	31.49		0.63	x	0.7	=	18.77	(79)
Southwest	0.9x	0.77	x	1.47	x	31.49		0.63	x	0.7	=	14.15	(79)
West	0.9x	0.77	x	1.84	x	19.64	x	0.63	x	0.7	=	33.13	(80)
West	0.9x	0.77	x	5.36	x	19.64	x	0.63	x	0.7	=	32.17	(80)
West	0.9x	0.77	x	3.72	x	19.64	x	0.63	x	0.7	=	22.33	(80)
West	0.9x	0.77	x	0.23	x	19.64	x	0.63	x	0.7	=	2.76	(80)
West	0.9x	0.77	x	4.49	x	19.64	x	0.63	x	0.7	=	26.95	(80)
West	0.9x	0.77	x	18.54	x	19.64	x	0.63	x	0.7	=	111.28	(80)
West	0.9x	0.77	x	7.54	x	19.64	x	0.63	x	0.7	=	45.26	(80)
West	0.9x	0.77	x	15.34	x	19.64	x	0.63	x	0.7	=	92.08	(80)
West	0.9x	0.77	x	3.7	x	19.64	x	0.63	x	0.7	=	44.42	(80)
West	0.9x	0.77	x	11.72	x	19.64	x	0.63	x	0.7	=	70.35	(80)
West	0.9x	0.77	x	3.38	x	19.64	x	0.63	x	0.7	=	20.29	(80)
West	0.9x	0.77	x	15.45	x	19.64	x	0.63	x	0.7	=	92.74	(80)
West	0.9x	0.77	x	5.4	x	19.64	x	0.63	x	0.7	=	32.41	(80)
West	0.9x	0.77	x	13.28	x	19.64	x	0.63	x	0.7	=	79.71	(80)
West	0.9x	0.77	x	9.49	x	19.64	x	0.63	x	0.7	=	56.96	(80)
West	0.9x	0.77	x	1.21	x	19.64	x	0.63	x	0.7	=	7.26	(80)
West	0.9x	0.77	x	10.98	x	19.64	x	0.63	x	0.7	=	65.91	(80)
West	0.9x	0.77	x	9	x	19.64	x	0.63	x	0.7	=	108.04	(80)
West	0.9x	0.77	x	50.33	x	19.64	x	0.63	x	0.7	=	302.1	(80)
West	0.9x	0.77	x	14.59	x	19.64	x	0.63	x	0.7	=	87.57	(80)
West	0.9x	0.77	x	2.6	x	19.64	x	0.63	x	0.7	=	15.61	(80)
West	0.9x	0.77	x	1.39	x	19.64	x	0.63	x	0.7	=	16.69	(80)
West	0.9x	0.77	x	18.59	x	19.64	x	0.63	x	0.7	=	111.58	(80)
West	0.9x	0.77	x	1.81	x	19.64	x	0.63	x	0.7	=	21.73	(80)
West	0.9x	0.77	x	58.85	x	19.64	x	0.63	x	0.7	=	353.24	(80)
West	0.9x	0.77	x	1.4	x	19.64	x	0.63	x	0.7	=	8.4	(80)
West	0.9x	0.77	x	1.84	x	38.42	x	0.63	x	0.7	=	64.81	(80)
West	0.9x	0.77	x	5.36	x	38.42	x	0.63	x	0.7	=	62.94	(80)
West	0.9x	0.77	x	3.72	x	38.42	x	0.63	x	0.7	=	43.68	(80)
West	0.9x	0.77	x	0.23	x	38.42	x	0.63	x	0.7	=	5.4	(80)
West	0.9x	0.77	x	4.49	x	38.42	x	0.63	x	0.7	=	52.72	(80)

SAP WorkSheet: New dwelling as built

West	0.9x	0.77	x	18.54	x	38.42	x	0.63	x	0.7	=	217.69	(80)
West	0.9x	0.77	x	7.54	x	38.42	x	0.63	x	0.7	=	88.53	(80)
West	0.9x	0.77	x	15.34	x	38.42	x	0.63	x	0.7	=	180.12	(80)
West	0.9x	0.77	x	3.7	x	38.42	x	0.63	x	0.7	=	86.89	(80)
West	0.9x	0.77	x	11.72	x	38.42	x	0.63	x	0.7	=	137.61	(80)
West	0.9x	0.77	x	3.38	x	38.42	x	0.63	x	0.7	=	39.69	(80)
West	0.9x	0.77	x	15.45	x	38.42	x	0.63	x	0.7	=	181.41	(80)
West	0.9x	0.77	x	5.4	x	38.42	x	0.63	x	0.7	=	63.41	(80)
West	0.9x	0.77	x	13.28	x	38.42	x	0.63	x	0.7	=	155.93	(80)
West	0.9x	0.77	x	9.49	x	38.42	x	0.63	x	0.7	=	111.43	(80)
West	0.9x	0.77	x	1.21	x	38.42	x	0.63	x	0.7	=	14.21	(80)
West	0.9x	0.77	x	10.98	x	38.42	x	0.63	x	0.7	=	128.93	(80)
West	0.9x	0.77	x	9	x	38.42	x	0.63	x	0.7	=	211.35	(80)
West	0.9x	0.77	x	50.33	x	38.42	x	0.63	x	0.7	=	590.97	(80)
West	0.9x	0.77	x	14.59	x	38.42	x	0.63	x	0.7	=	171.31	(80)
West	0.9x	0.77	x	2.6	x	38.42	x	0.63	x	0.7	=	30.53	(80)
West	0.9x	0.77	x	1.39	x	38.42	x	0.63	x	0.7	=	32.64	(80)
West	0.9x	0.77	x	18.59	x	38.42	x	0.63	x	0.7	=	218.28	(80)
West	0.9x	0.77	x	1.81	x	38.42	x	0.63	x	0.7	=	42.51	(80)
West	0.9x	0.77	x	58.85	x	38.42	x	0.63	x	0.7	=	691.01	(80)
West	0.9x	0.77	x	1.4	x	38.42	x	0.63	x	0.7	=	16.44	(80)
West	0.9x	0.77	x	1.84	x	63.27	x	0.63	x	0.7	=	106.74	(80)
West	0.9x	0.77	x	5.36	x	63.27	x	0.63	x	0.7	=	103.65	(80)
West	0.9x	0.77	x	3.72	x	63.27	x	0.63	x	0.7	=	71.93	(80)
West	0.9x	0.77	x	0.23	x	63.27	x	0.63	x	0.7	=	8.9	(80)
West	0.9x	0.77	x	4.49	x	63.27	x	0.63	x	0.7	=	86.82	(80)
West	0.9x	0.77	x	18.54	x	63.27	x	0.63	x	0.7	=	358.51	(80)
West	0.9x	0.77	x	7.54	x	63.27	x	0.63	x	0.7	=	145.8	(80)
West	0.9x	0.77	x	15.34	x	63.27	x	0.63	x	0.7	=	296.63	(80)
West	0.9x	0.77	x	3.7	x	63.27	x	0.63	x	0.7	=	143.09	(80)
West	0.9x	0.77	x	11.72	x	63.27	x	0.63	x	0.7	=	226.63	(80)
West	0.9x	0.77	x	3.38	x	63.27	x	0.63	x	0.7	=	65.36	(80)
West	0.9x	0.77	x	15.45	x	63.27	x	0.63	x	0.7	=	298.76	(80)
West	0.9x	0.77	x	5.4	x	63.27	x	0.63	x	0.7	=	104.42	(80)
West	0.9x	0.77	x	13.28	x	63.27	x	0.63	x	0.7	=	256.8	(80)
West	0.9x	0.77	x	9.49	x	63.27	x	0.63	x	0.7	=	183.51	(80)
West	0.9x	0.77	x	1.21	x	63.27	x	0.63	x	0.7	=	23.4	(80)
West	0.9x	0.77	x	10.98	x	63.27	x	0.63	x	0.7	=	212.32	(80)
West	0.9x	0.77	x	9	x	63.27	x	0.63	x	0.7	=	348.07	(80)
West	0.9x	0.77	x	50.33	x	63.27	x	0.63	x	0.7	=	973.24	(80)
West	0.9x	0.77	x	14.59	x	63.27	x	0.63	x	0.7	=	282.13	(80)

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West	0.9x	0.77	x	2.6	x	63.27	x	0.63	x	0.7	=	50.28	(80)
West	0.9x	0.77	x	1.39	x	63.27	x	0.63	x	0.7	=	53.76	(80)
West	0.9x	0.77	x	18.59	x	63.27	x	0.63	x	0.7	=	359.48	(80)
West	0.9x	0.77	x	1.81	x	63.27	x	0.63	x	0.7	=	70	(80)
West	0.9x	0.77	x	58.85	x	63.27	x	0.63	x	0.7	=	1137.99	(80)
West	0.9x	0.77	x	1.4	x	63.27	x	0.63	x	0.7	=	27.07	(80)
West	0.9x	0.77	x	1.84	x	92.28	x	0.63	x	0.7	=	155.68	(80)
West	0.9x	0.77	x	5.36	x	92.28	x	0.63	x	0.7	=	151.16	(80)
West	0.9x	0.77	x	3.72	x	92.28	x	0.63	x	0.7	=	104.91	(80)
West	0.9x	0.77	x	0.23	x	92.28	x	0.63	x	0.7	=	12.97	(80)
West	0.9x	0.77	x	4.49	x	92.28	x	0.63	x	0.7	=	126.63	(80)
West	0.9x	0.77	x	18.54	x	92.28	x	0.63	x	0.7	=	522.87	(80)
West	0.9x	0.77	x	7.54	x	92.28	x	0.63	x	0.7	=	212.64	(80)
West	0.9x	0.77	x	15.34	x	92.28	x	0.63	x	0.7	=	432.62	(80)
West	0.9x	0.77	x	3.7	x	92.28	x	0.63	x	0.7	=	208.69	(80)
West	0.9x	0.77	x	11.72	x	92.28	x	0.63	x	0.7	=	330.53	(80)
West	0.9x	0.77	x	3.38	x	92.28	x	0.63	x	0.7	=	95.32	(80)
West	0.9x	0.77	x	15.45	x	92.28	x	0.63	x	0.7	=	435.72	(80)
West	0.9x	0.77	x	5.4	x	92.28	x	0.63	x	0.7	=	152.29	(80)
West	0.9x	0.77	x	13.28	x	92.28	x	0.63	x	0.7	=	374.52	(80)
West	0.9x	0.77	x	9.49	x	92.28	x	0.63	x	0.7	=	267.64	(80)
West	0.9x	0.77	x	1.21	x	92.28	x	0.63	x	0.7	=	34.12	(80)
West	0.9x	0.77	x	10.98	x	92.28	x	0.63	x	0.7	=	309.66	(80)
West	0.9x	0.77	x	9	x	92.28	x	0.63	x	0.7	=	507.64	(80)
West	0.9x	0.77	x	50.33	x	92.28	x	0.63	x	0.7	=	1419.41	(80)
West	0.9x	0.77	x	14.59	x	92.28	x	0.63	x	0.7	=	411.47	(80)
West	0.9x	0.77	x	2.6	x	92.28	x	0.63	x	0.7	=	73.33	(80)
West	0.9x	0.77	x	1.39	x	92.28	x	0.63	x	0.7	=	78.4	(80)
West	0.9x	0.77	x	18.59	x	92.28	x	0.63	x	0.7	=	524.28	(80)
West	0.9x	0.77	x	1.81	x	92.28	x	0.63	x	0.7	=	102.09	(80)
West	0.9x	0.77	x	58.85	x	92.28	x	0.63	x	0.7	=	1659.69	(80)
West	0.9x	0.77	x	1.4	x	92.28	x	0.63	x	0.7	=	39.48	(80)
West	0.9x	0.77	x	1.84	x	113.09	x	0.63	x	0.7	=	190.79	(80)
West	0.9x	0.77	x	5.36	x	113.09	x	0.63	x	0.7	=	185.26	(80)
West	0.9x	0.77	x	3.72	x	113.09	x	0.63	x	0.7	=	128.57	(80)
West	0.9x	0.77	x	0.23	x	113.09	x	0.63	x	0.7	=	15.9	(80)
West	0.9x	0.77	x	4.49	x	113.09	x	0.63	x	0.7	=	155.19	(80)
West	0.9x	0.77	x	18.54	x	113.09	x	0.63	x	0.7	=	640.79	(80)
West	0.9x	0.77	x	7.54	x	113.09	x	0.63	x	0.7	=	260.6	(80)
West	0.9x	0.77	x	15.34	x	113.09	x	0.63	x	0.7	=	530.19	(80)
West	0.9x	0.77	x	3.7	x	113.09	x	0.63	x	0.7	=	255.76	(80)

SAP WorkSheet: New dwelling as built

West	0.9x	0.77	x	11.72	x	113.09	x	0.63	x	0.7	=	405.07	(80)
West	0.9x	0.77	x	3.38	x	113.09	x	0.63	x	0.7	=	116.82	(80)
West	0.9x	0.77	x	15.45	x	113.09	x	0.63	x	0.7	=	533.99	(80)
West	0.9x	0.77	x	5.4	x	113.09	x	0.63	x	0.7	=	186.64	(80)
West	0.9x	0.77	x	13.28	x	113.09	x	0.63	x	0.7	=	458.99	(80)
West	0.9x	0.77	x	9.49	x	113.09	x	0.63	x	0.7	=	328	(80)
West	0.9x	0.77	x	1.21	x	113.09	x	0.63	x	0.7	=	41.82	(80)
West	0.9x	0.77	x	10.98	x	113.09	x	0.63	x	0.7	=	379.5	(80)
West	0.9x	0.77	x	9	x	113.09	x	0.63	x	0.7	=	622.13	(80)
West	0.9x	0.77	x	50.33	x	113.09	x	0.63	x	0.7	=	1739.54	(80)
West	0.9x	0.77	x	14.59	x	113.09	x	0.63	x	0.7	=	504.27	(80)
West	0.9x	0.77	x	2.6	x	113.09	x	0.63	x	0.7	=	89.86	(80)
West	0.9x	0.77	x	1.39	x	113.09	x	0.63	x	0.7	=	96.08	(80)
West	0.9x	0.77	x	18.59	x	113.09	x	0.63	x	0.7	=	642.52	(80)
West	0.9x	0.77	x	1.81	x	113.09	x	0.63	x	0.7	=	125.12	(80)
West	0.9x	0.77	x	58.85	x	113.09	x	0.63	x	0.7	=	2034.01	(80)
West	0.9x	0.77	x	1.4	x	113.09	x	0.63	x	0.7	=	48.39	(80)
West	0.9x	0.77	x	1.84	x	115.77	x	0.63	x	0.7	=	195.3	(80)
West	0.9x	0.77	x	5.36	x	115.77	x	0.63	x	0.7	=	189.64	(80)
West	0.9x	0.77	x	3.72	x	115.77	x	0.63	x	0.7	=	131.62	(80)
West	0.9x	0.77	x	0.23	x	115.77	x	0.63	x	0.7	=	16.28	(80)
West	0.9x	0.77	x	4.49	x	115.77	x	0.63	x	0.7	=	158.86	(80)
West	0.9x	0.77	x	18.54	x	115.77	x	0.63	x	0.7	=	655.96	(80)
West	0.9x	0.77	x	7.54	x	115.77	x	0.63	x	0.7	=	266.77	(80)
West	0.9x	0.77	x	15.34	x	115.77	x	0.63	x	0.7	=	542.74	(80)
West	0.9x	0.77	x	3.7	x	115.77	x	0.63	x	0.7	=	261.82	(80)
West	0.9x	0.77	x	11.72	x	115.77	x	0.63	x	0.7	=	414.67	(80)
West	0.9x	0.77	x	3.38	x	115.77	x	0.63	x	0.7	=	119.59	(80)
West	0.9x	0.77	x	15.45	x	115.77	x	0.63	x	0.7	=	546.64	(80)
West	0.9x	0.77	x	5.4	x	115.77	x	0.63	x	0.7	=	191.06	(80)
West	0.9x	0.77	x	13.28	x	115.77	x	0.63	x	0.7	=	469.86	(80)
West	0.9x	0.77	x	9.49	x	115.77	x	0.63	x	0.7	=	335.77	(80)
West	0.9x	0.77	x	1.21	x	115.77	x	0.63	x	0.7	=	42.81	(80)
West	0.9x	0.77	x	10.98	x	115.77	x	0.63	x	0.7	=	388.48	(80)
West	0.9x	0.77	x	9	x	115.77	x	0.63	x	0.7	=	636.86	(80)
West	0.9x	0.77	x	50.33	x	115.77	x	0.63	x	0.7	=	1780.72	(80)
West	0.9x	0.77	x	14.59	x	115.77	x	0.63	x	0.7	=	516.21	(80)
West	0.9x	0.77	x	2.6	x	115.77	x	0.63	x	0.7	=	91.99	(80)
West	0.9x	0.77	x	1.39	x	115.77	x	0.63	x	0.7	=	98.36	(80)
West	0.9x	0.77	x	18.59	x	115.77	x	0.63	x	0.7	=	657.73	(80)
West	0.9x	0.77	x	1.81	x	115.77	x	0.63	x	0.7	=	128.08	(80)

SAP WorkSheet: New dwelling as built

West	0.9x	0.77	x	58.85	x	115.77	x	0.63	x	0.7	=	2082.17	(80)
West	0.9x	0.77	x	1.4	x	115.77	x	0.63	x	0.7	=	49.53	(80)
West	0.9x	0.77	x	1.84	x	110.22	x	0.63	x	0.7	=	185.94	(80)
West	0.9x	0.77	x	5.36	x	110.22	x	0.63	x	0.7	=	180.55	(80)
West	0.9x	0.77	x	3.72	x	110.22	x	0.63	x	0.7	=	125.3	(80)
West	0.9x	0.77	x	0.23	x	110.22	x	0.63	x	0.7	=	15.49	(80)
West	0.9x	0.77	x	4.49	x	110.22	x	0.63	x	0.7	=	151.24	(80)
West	0.9x	0.77	x	18.54	x	110.22	x	0.63	x	0.7	=	624.5	(80)
West	0.9x	0.77	x	7.54	x	110.22	x	0.63	x	0.7	=	253.98	(80)
West	0.9x	0.77	x	15.34	x	110.22	x	0.63	x	0.7	=	516.71	(80)
West	0.9x	0.77	x	3.7	x	110.22	x	0.63	x	0.7	=	249.26	(80)
West	0.9x	0.77	x	11.72	x	110.22	x	0.63	x	0.7	=	394.78	(80)
West	0.9x	0.77	x	3.38	x	110.22	x	0.63	x	0.7	=	113.85	(80)
West	0.9x	0.77	x	15.45	x	110.22	x	0.63	x	0.7	=	520.42	(80)
West	0.9x	0.77	x	5.4	x	110.22	x	0.63	x	0.7	=	181.89	(80)
West	0.9x	0.77	x	13.28	x	110.22	x	0.63	x	0.7	=	447.33	(80)
West	0.9x	0.77	x	9.49	x	110.22	x	0.63	x	0.7	=	319.66	(80)
West	0.9x	0.77	x	1.21	x	110.22	x	0.63	x	0.7	=	40.76	(80)
West	0.9x	0.77	x	10.98	x	110.22	x	0.63	x	0.7	=	369.85	(80)
West	0.9x	0.77	x	9	x	110.22	x	0.63	x	0.7	=	606.31	(80)
West	0.9x	0.77	x	50.33	x	110.22	x	0.63	x	0.7	=	1695.32	(80)
West	0.9x	0.77	x	14.59	x	110.22	x	0.63	x	0.7	=	491.45	(80)
West	0.9x	0.77	x	2.6	x	110.22	x	0.63	x	0.7	=	87.58	(80)
West	0.9x	0.77	x	1.39	x	110.22	x	0.63	x	0.7	=	93.64	(80)
West	0.9x	0.77	x	18.59	x	110.22	x	0.63	x	0.7	=	626.19	(80)
West	0.9x	0.77	x	1.81	x	110.22	x	0.63	x	0.7	=	121.94	(80)
West	0.9x	0.77	x	58.85	x	110.22	x	0.63	x	0.7	=	1982.31	(80)
West	0.9x	0.77	x	1.4	x	110.22	x	0.63	x	0.7	=	47.16	(80)
West	0.9x	0.77	x	1.84	x	94.68	x	0.63	x	0.7	=	159.72	(80)
West	0.9x	0.77	x	5.36	x	94.68	x	0.63	x	0.7	=	155.09	(80)
West	0.9x	0.77	x	3.72	x	94.68	x	0.63	x	0.7	=	107.64	(80)
West	0.9x	0.77	x	0.23	x	94.68	x	0.63	x	0.7	=	13.31	(80)
West	0.9x	0.77	x	4.49	x	94.68	x	0.63	x	0.7	=	129.91	(80)
West	0.9x	0.77	x	18.54	x	94.68	x	0.63	x	0.7	=	536.44	(80)
West	0.9x	0.77	x	7.54	x	94.68	x	0.63	x	0.7	=	218.16	(80)
West	0.9x	0.77	x	15.34	x	94.68	x	0.63	x	0.7	=	443.85	(80)
West	0.9x	0.77	x	3.7	x	94.68	x	0.63	x	0.7	=	214.11	(80)
West	0.9x	0.77	x	11.72	x	94.68	x	0.63	x	0.7	=	339.11	(80)
West	0.9x	0.77	x	3.38	x	94.68	x	0.63	x	0.7	=	97.8	(80)
West	0.9x	0.77	x	15.45	x	94.68	x	0.63	x	0.7	=	447.03	(80)
West	0.9x	0.77	x	5.4	x	94.68	x	0.63	x	0.7	=	156.24	(80)

SAP WorkSheet: New dwelling as built

West	0.9x	0.77	x	13.28	x	94.68	x	0.63	x	0.7	=	384.25	(80)
West	0.9x	0.77	x	9.49	x	94.68	x	0.63	x	0.7	=	274.59	(80)
West	0.9x	0.77	x	1.21	x	94.68	x	0.63	x	0.7	=	35.01	(80)
West	0.9x	0.77	x	10.98	x	94.68	x	0.63	x	0.7	=	317.7	(80)
West	0.9x	0.77	x	9	x	94.68	x	0.63	x	0.7	=	520.82	(80)
West	0.9x	0.77	x	50.33	x	94.68	x	0.63	x	0.7	=	1456.26	(80)
West	0.9x	0.77	x	14.59	x	94.68	x	0.63	x	0.7	=	422.15	(80)
West	0.9x	0.77	x	2.6	x	94.68	x	0.63	x	0.7	=	75.23	(80)
West	0.9x	0.77	x	1.39	x	94.68	x	0.63	x	0.7	=	80.44	(80)
West	0.9x	0.77	x	18.59	x	94.68	x	0.63	x	0.7	=	537.89	(80)
West	0.9x	0.77	x	1.81	x	94.68	x	0.63	x	0.7	=	104.74	(80)
West	0.9x	0.77	x	58.85	x	94.68	x	0.63	x	0.7	=	1702.78	(80)
West	0.9x	0.77	x	1.4	x	94.68	x	0.63	x	0.7	=	40.51	(80)
West	0.9x	0.77	x	1.84	x	73.59	x	0.63	x	0.7	=	124.14	(80)
West	0.9x	0.77	x	5.36	x	73.59	x	0.63	x	0.7	=	120.55	(80)
West	0.9x	0.77	x	3.72	x	73.59	x	0.63	x	0.7	=	83.66	(80)
West	0.9x	0.77	x	0.23	x	73.59	x	0.63	x	0.7	=	10.35	(80)
West	0.9x	0.77	x	4.49	x	73.59	x	0.63	x	0.7	=	100.98	(80)
West	0.9x	0.77	x	18.54	x	73.59	x	0.63	x	0.7	=	416.96	(80)
West	0.9x	0.77	x	7.54	x	73.59	x	0.63	x	0.7	=	169.57	(80)
West	0.9x	0.77	x	15.34	x	73.59	x	0.63	x	0.7	=	344.99	(80)
West	0.9x	0.77	x	3.7	x	73.59	x	0.63	x	0.7	=	166.42	(80)
West	0.9x	0.77	x	11.72	x	73.59	x	0.63	x	0.7	=	263.58	(80)
West	0.9x	0.77	x	3.38	x	73.59	x	0.63	x	0.7	=	76.02	(80)
West	0.9x	0.77	x	15.45	x	73.59	x	0.63	x	0.7	=	347.47	(80)
West	0.9x	0.77	x	5.4	x	73.59	x	0.63	x	0.7	=	121.45	(80)
West	0.9x	0.77	x	13.28	x	73.59	x	0.63	x	0.7	=	298.67	(80)
West	0.9x	0.77	x	9.49	x	73.59	x	0.63	x	0.7	=	213.43	(80)
West	0.9x	0.77	x	1.21	x	73.59	x	0.63	x	0.7	=	27.21	(80)
West	0.9x	0.77	x	10.98	x	73.59	x	0.63	x	0.7	=	246.94	(80)
West	0.9x	0.77	x	9	x	73.59	x	0.63	x	0.7	=	404.82	(80)
West	0.9x	0.77	x	50.33	x	73.59	x	0.63	x	0.7	=	1131.91	(80)
West	0.9x	0.77	x	14.59	x	73.59	x	0.63	x	0.7	=	328.13	(80)
West	0.9x	0.77	x	2.6	x	73.59	x	0.63	x	0.7	=	58.47	(80)
West	0.9x	0.77	x	1.39	x	73.59	x	0.63	x	0.7	=	62.52	(80)
West	0.9x	0.77	x	18.59	x	73.59	x	0.63	x	0.7	=	418.09	(80)
West	0.9x	0.77	x	1.81	x	73.59	x	0.63	x	0.7	=	81.41	(80)
West	0.9x	0.77	x	58.85	x	73.59	x	0.63	x	0.7	=	1323.53	(80)
West	0.9x	0.77	x	1.4	x	73.59	x	0.63	x	0.7	=	31.49	(80)
West	0.9x	0.77	x	1.84	x	45.59	x	0.63	x	0.7	=	76.91	(80)
West	0.9x	0.77	x	5.36	x	45.59	x	0.63	x	0.7	=	74.68	(80)

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West	0.9x	0.77	x	3.72	x	45.59	x	0.63	x	0.7	=	51.83	(80)
West	0.9x	0.77	x	0.23	x	45.59	x	0.63	x	0.7	=	6.41	(80)
West	0.9x	0.77	x	4.49	x	45.59	x	0.63	x	0.7	=	62.56	(80)
West	0.9x	0.77	x	18.54	x	45.59	x	0.63	x	0.7	=	258.31	(80)
West	0.9x	0.77	x	7.54	x	45.59	x	0.63	x	0.7	=	105.05	(80)
West	0.9x	0.77	x	15.34	x	45.59	x	0.63	x	0.7	=	213.73	(80)
West	0.9x	0.77	x	3.7	x	45.59	x	0.63	x	0.7	=	103.1	(80)
West	0.9x	0.77	x	11.72	x	45.59	x	0.63	x	0.7	=	163.29	(80)
West	0.9x	0.77	x	3.38	x	45.59	x	0.63	x	0.7	=	47.09	(80)
West	0.9x	0.77	x	15.45	x	45.59	x	0.63	x	0.7	=	215.26	(80)
West	0.9x	0.77	x	5.4	x	45.59	x	0.63	x	0.7	=	75.24	(80)
West	0.9x	0.77	x	13.28	x	45.59	x	0.63	x	0.7	=	185.03	(80)
West	0.9x	0.77	x	9.49	x	45.59	x	0.63	x	0.7	=	132.22	(80)
West	0.9x	0.77	x	1.21	x	45.59	x	0.63	x	0.7	=	16.86	(80)
West	0.9x	0.77	x	10.98	x	45.59	x	0.63	x	0.7	=	152.98	(80)
West	0.9x	0.77	x	9	x	45.59	x	0.63	x	0.7	=	250.79	(80)
West	0.9x	0.77	x	50.33	x	45.59	x	0.63	x	0.7	=	701.23	(80)
West	0.9x	0.77	x	14.59	x	45.59	x	0.63	x	0.7	=	203.28	(80)
West	0.9x	0.77	x	2.6	x	45.59	x	0.63	x	0.7	=	36.22	(80)
West	0.9x	0.77	x	1.39	x	45.59	x	0.63	x	0.7	=	38.73	(80)
West	0.9x	0.77	x	18.59	x	45.59	x	0.63	x	0.7	=	259.01	(80)
West	0.9x	0.77	x	1.81	x	45.59	x	0.63	x	0.7	=	50.44	(80)
West	0.9x	0.77	x	58.85	x	45.59	x	0.63	x	0.7	=	819.94	(80)
West	0.9x	0.77	x	1.4	x	45.59	x	0.63	x	0.7	=	19.51	(80)
West	0.9x	0.77	x	1.84	x	24.49	x	0.63	x	0.7	=	41.31	(80)
West	0.9x	0.77	x	5.36	x	24.49	x	0.63	x	0.7	=	40.12	(80)
West	0.9x	0.77	x	3.72	x	24.49	x	0.63	x	0.7	=	27.84	(80)
West	0.9x	0.77	x	0.23	x	24.49	x	0.63	x	0.7	=	3.44	(80)
West	0.9x	0.77	x	4.49	x	24.49	x	0.63	x	0.7	=	33.6	(80)
West	0.9x	0.77	x	18.54	x	24.49	x	0.63	x	0.7	=	138.76	(80)
West	0.9x	0.77	x	7.54	x	24.49	x	0.63	x	0.7	=	56.43	(80)
West	0.9x	0.77	x	15.34	x	24.49	x	0.63	x	0.7	=	114.81	(80)
West	0.9x	0.77	x	3.7	x	24.49	x	0.63	x	0.7	=	55.38	(80)
West	0.9x	0.77	x	11.72	x	24.49	x	0.63	x	0.7	=	87.71	(80)
West	0.9x	0.77	x	3.38	x	24.49	x	0.63	x	0.7	=	25.3	(80)
West	0.9x	0.77	x	15.45	x	24.49	x	0.63	x	0.7	=	115.63	(80)
West	0.9x	0.77	x	5.4	x	24.49	x	0.63	x	0.7	=	40.41	(80)
West	0.9x	0.77	x	13.28	x	24.49	x	0.63	x	0.7	=	99.39	(80)
West	0.9x	0.77	x	9.49	x	24.49	x	0.63	x	0.7	=	71.02	(80)
West	0.9x	0.77	x	1.21	x	24.49	x	0.63	x	0.7	=	9.06	(80)
West	0.9x	0.77	x	10.98	x	24.49	x	0.63	x	0.7	=	82.18	(80)

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West	0.9x	0.77	x	9	x	24.49	x	0.63	x	0.7	=	134.72	(80)
West	0.9x	0.77	x	50.33	x	24.49	x	0.63	x	0.7	=	376.68	(80)
West	0.9x	0.77	x	14.59	x	24.49	x	0.63	x	0.7	=	109.19	(80)
West	0.9x	0.77	x	2.6	x	24.49	x	0.63	x	0.7	=	19.46	(80)
West	0.9x	0.77	x	1.39	x	24.49	x	0.63	x	0.7	=	20.81	(80)
West	0.9x	0.77	x	18.59	x	24.49	x	0.63	x	0.7	=	139.13	(80)
West	0.9x	0.77	x	1.81	x	24.49	x	0.63	x	0.7	=	27.09	(80)
West	0.9x	0.77	x	58.85	x	24.49	x	0.63	x	0.7	=	440.44	(80)
West	0.9x	0.77	x	1.4	x	24.49	x	0.63	x	0.7	=	10.48	(80)
West	0.9x	0.77	x	1.84	x	16.15	x	0.63	x	0.7	=	27.25	(80)
West	0.9x	0.77	x	5.36	x	16.15	x	0.63	x	0.7	=	26.46	(80)
West	0.9x	0.77	x	3.72	x	16.15	x	0.63	x	0.7	=	18.36	(80)
West	0.9x	0.77	x	0.23	x	16.15	x	0.63	x	0.7	=	2.27	(80)
West	0.9x	0.77	x	4.49	x	16.15	x	0.63	x	0.7	=	22.16	(80)
West	0.9x	0.77	x	18.54	x	16.15	x	0.63	x	0.7	=	91.51	(80)
West	0.9x	0.77	x	7.54	x	16.15	x	0.63	x	0.7	=	37.22	(80)
West	0.9x	0.77	x	15.34	x	16.15	x	0.63	x	0.7	=	75.72	(80)
West	0.9x	0.77	x	3.7	x	16.15	x	0.63	x	0.7	=	36.53	(80)
West	0.9x	0.77	x	11.72	x	16.15	x	0.63	x	0.7	=	57.85	(80)
West	0.9x	0.77	x	3.38	x	16.15	x	0.63	x	0.7	=	16.68	(80)
West	0.9x	0.77	x	15.45	x	16.15	x	0.63	x	0.7	=	76.26	(80)
West	0.9x	0.77	x	5.4	x	16.15	x	0.63	x	0.7	=	26.65	(80)
West	0.9x	0.77	x	13.28	x	16.15	x	0.63	x	0.7	=	65.55	(80)
West	0.9x	0.77	x	9.49	x	16.15	x	0.63	x	0.7	=	46.84	(80)
West	0.9x	0.77	x	1.21	x	16.15	x	0.63	x	0.7	=	5.97	(80)
West	0.9x	0.77	x	10.98	x	16.15	x	0.63	x	0.7	=	54.2	(80)
West	0.9x	0.77	x	9	x	16.15	x	0.63	x	0.7	=	88.85	(80)
West	0.9x	0.77	x	50.33	x	16.15	x	0.63	x	0.7	=	248.43	(80)
West	0.9x	0.77	x	14.59	x	16.15	x	0.63	x	0.7	=	72.02	(80)
West	0.9x	0.77	x	2.6	x	16.15	x	0.63	x	0.7	=	12.83	(80)
West	0.9x	0.77	x	1.39	x	16.15	x	0.63	x	0.7	=	13.72	(80)
West	0.9x	0.77	x	18.59	x	16.15	x	0.63	x	0.7	=	91.76	(80)
West	0.9x	0.77	x	1.81	x	16.15	x	0.63	x	0.7	=	17.87	(80)
West	0.9x	0.77	x	58.85	x	16.15	x	0.63	x	0.7	=	290.48	(80)
West	0.9x	0.77	x	1.4	x	16.15	x	0.63	x	0.7	=	6.91	(80)
Northwest	0.9x	0.77	x	1.95	x	11.28	x	0.63	x	0.7	=	6.72	(81)
Northwest	0.9x	0.77	x	1.47	x	11.28	x	0.63	x	0.7	=	5.07	(81)
Northwest	0.9x	0.77	x	1.95	x	22.97	x	0.63	x	0.7	=	13.69	(81)
Northwest	0.9x	0.77	x	1.47	x	22.97	x	0.63	x	0.7	=	10.32	(81)
Northwest	0.9x	0.77	x	1.95	x	41.38	x	0.63	x	0.7	=	24.66	(81)
Northwest	0.9x	0.77	x	1.47	x	41.38	x	0.63	x	0.7	=	18.59	(81)

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Northwest 0.9x	0.77	x	1.95	x	67.96	x	0.63	x	0.7	=	40.5	(81)
Northwest 0.9x	0.77	x	1.47	x	67.96	x	0.63	x	0.7	=	30.53	(81)
Northwest 0.9x	0.77	x	1.95	x	91.35	x	0.63	x	0.7	=	54.44	(81)
Northwest 0.9x	0.77	x	1.47	x	91.35	x	0.63	x	0.7	=	41.04	(81)
Northwest 0.9x	0.77	x	1.95	x	97.38	x	0.63	x	0.7	=	58.04	(81)
Northwest 0.9x	0.77	x	1.47	x	97.38	x	0.63	x	0.7	=	43.75	(81)
Northwest 0.9x	0.77	x	1.95	x	91.1	x	0.63	x	0.7	=	54.29	(81)
Northwest 0.9x	0.77	x	1.47	x	91.1	x	0.63	x	0.7	=	40.93	(81)
Northwest 0.9x	0.77	x	1.95	x	72.63	x	0.63	x	0.7	=	43.28	(81)
Northwest 0.9x	0.77	x	1.47	x	72.63	x	0.63	x	0.7	=	32.63	(81)
Northwest 0.9x	0.77	x	1.95	x	50.42	x	0.63	x	0.7	=	30.05	(81)
Northwest 0.9x	0.77	x	1.47	x	50.42	x	0.63	x	0.7	=	22.65	(81)
Northwest 0.9x	0.77	x	1.95	x	28.07	x	0.63	x	0.7	=	16.73	(81)
Northwest 0.9x	0.77	x	1.47	x	28.07	x	0.63	x	0.7	=	12.61	(81)
Northwest 0.9x	0.77	x	1.95	x	14.2	x	0.63	x	0.7	=	8.46	(81)
Northwest 0.9x	0.77	x	1.47	x	14.2	x	0.63	x	0.7	=	6.38	(81)
Northwest 0.9x	0.77	x	1.95	x	9.21	x	0.63	x	0.7	=	5.49	(81)
Northwest 0.9x	0.77	x	1.47	x	9.21	x	0.63	x	0.7	=	4.14	(81)
Rooflights 0.9x	1	x	3.14	x	26	x	0.63	x	0.7	=	32.4	(82)
Rooflights 0.9x	1	x	28.56	x	26	x	0.63	x	0.7	=	294.72	(82)
Rooflights 0.9x	1	x	13.81	x	26	x	0.63	x	0.7	=	142.51	(82)
Rooflights 0.9x	1	x	8.42	x	26	x	0.63	x	0.7	=	86.89	(82)
Rooflights 0.9x	1	x	2.25	x	26	x	0.63	x	0.7	=	69.66	(82)
Rooflights 0.9x	1	x	3.45	x	26	x	0.63	x	0.7	=	71.2	(82)
Rooflights 0.9x	1	x	2.35	x	26	x	0.63	x	0.7	=	24.25	(82)
Rooflights 0.9x	1	x	6.6	x	26	x	0.63	x	0.7	=	68.11	(82)
Rooflights 0.9x	1	x	3.14	x	54	x	0.63	x	0.7	=	67.3	(82)
Rooflights 0.9x	1	x	28.56	x	54	x	0.63	x	0.7	=	612.12	(82)
Rooflights 0.9x	1	x	13.81	x	54	x	0.63	x	0.7	=	295.98	(82)
Rooflights 0.9x	1	x	8.42	x	54	x	0.63	x	0.7	=	180.46	(82)
Rooflights 0.9x	1	x	2.25	x	54	x	0.63	x	0.7	=	144.67	(82)
Rooflights 0.9x	1	x	3.45	x	54	x	0.63	x	0.7	=	147.88	(82)
Rooflights 0.9x	1	x	2.35	x	54	x	0.63	x	0.7	=	50.37	(82)
Rooflights 0.9x	1	x	6.6	x	54	x	0.63	x	0.7	=	141.46	(82)
Rooflights 0.9x	1	x	3.14	x	96	x	0.63	x	0.7	=	119.64	(82)
Rooflights 0.9x	1	x	28.56	x	96	x	0.63	x	0.7	=	1088.2	(82)
Rooflights 0.9x	1	x	13.81	x	96	x	0.63	x	0.7	=	526.19	(82)
Rooflights 0.9x	1	x	8.42	x	96	x	0.63	x	0.7	=	320.82	(82)
Rooflights 0.9x	1	x	2.25	x	96	x	0.63	x	0.7	=	257.19	(82)
Rooflights 0.9x	1	x	3.45	x	96	x	0.63	x	0.7	=	262.91	(82)
Rooflights 0.9x	1	x	2.35	x	96	x	0.63	x	0.7	=	89.54	(82)

SAP WorkSheet: New dwelling as built

Rooflights 0.9x	1	x	6.6	x	96	x	0.63	x	0.7	=	251.48	(82)
Rooflights 0.9x	1	x	3.14	x	150	x	0.63	x	0.7	=	186.94	(82)
Rooflights 0.9x	1	x	28.56	x	150	x	0.63	x	0.7	=	1700.32	(82)
Rooflights 0.9x	1	x	13.81	x	150	x	0.63	x	0.7	=	822.18	(82)
Rooflights 0.9x	1	x	8.42	x	150	x	0.63	x	0.7	=	501.28	(82)
Rooflights 0.9x	1	x	2.25	x	150	x	0.63	x	0.7	=	401.86	(82)
Rooflights 0.9x	1	x	3.45	x	150	x	0.63	x	0.7	=	410.79	(82)
Rooflights 0.9x	1	x	2.35	x	150	x	0.63	x	0.7	=	139.91	(82)
Rooflights 0.9x	1	x	6.6	x	150	x	0.63	x	0.7	=	392.93	(82)
Rooflights 0.9x	1	x	3.14	x	192	x	0.63	x	0.7	=	239.28	(82)
Rooflights 0.9x	1	x	28.56	x	192	x	0.63	x	0.7	=	2176.41	(82)
Rooflights 0.9x	1	x	13.81	x	192	x	0.63	x	0.7	=	1052.39	(82)
Rooflights 0.9x	1	x	8.42	x	192	x	0.63	x	0.7	=	641.64	(82)
Rooflights 0.9x	1	x	2.25	x	192	x	0.63	x	0.7	=	514.38	(82)
Rooflights 0.9x	1	x	3.45	x	192	x	0.63	x	0.7	=	525.81	(82)
Rooflights 0.9x	1	x	2.35	x	192	x	0.63	x	0.7	=	179.08	(82)
Rooflights 0.9x	1	x	6.6	x	192	x	0.63	x	0.7	=	502.95	(82)
Rooflights 0.9x	1	x	3.14	x	200	x	0.63	x	0.7	=	249.25	(82)
Rooflights 0.9x	1	x	28.56	x	200	x	0.63	x	0.7	=	2267.09	(82)
Rooflights 0.9x	1	x	13.81	x	200	x	0.63	x	0.7	=	1096.24	(82)
Rooflights 0.9x	1	x	8.42	x	200	x	0.63	x	0.7	=	668.38	(82)
Rooflights 0.9x	1	x	2.25	x	200	x	0.63	x	0.7	=	535.81	(82)
Rooflights 0.9x	1	x	3.45	x	200	x	0.63	x	0.7	=	547.72	(82)
Rooflights 0.9x	1	x	2.35	x	200	x	0.63	x	0.7	=	186.54	(82)
Rooflights 0.9x	1	x	6.6	x	200	x	0.63	x	0.7	=	523.91	(82)
Rooflights 0.9x	1	x	3.14	x	189	x	0.63	x	0.7	=	235.54	(82)
Rooflights 0.9x	1	x	28.56	x	189	x	0.63	x	0.7	=	2142.4	(82)
Rooflights 0.9x	1	x	13.81	x	189	x	0.63	x	0.7	=	1035.94	(82)
Rooflights 0.9x	1	x	8.42	x	189	x	0.63	x	0.7	=	631.62	(82)
Rooflights 0.9x	1	x	2.25	x	189	x	0.63	x	0.7	=	506.35	(82)
Rooflights 0.9x	1	x	3.45	x	189	x	0.63	x	0.7	=	517.6	(82)
Rooflights 0.9x	1	x	2.35	x	189	x	0.63	x	0.7	=	176.28	(82)
Rooflights 0.9x	1	x	6.6	x	189	x	0.63	x	0.7	=	495.09	(82)
Rooflights 0.9x	1	x	3.14	x	157	x	0.63	x	0.7	=	195.66	(82)
Rooflights 0.9x	1	x	28.56	x	157	x	0.63	x	0.7	=	1779.67	(82)
Rooflights 0.9x	1	x	13.81	x	157	x	0.63	x	0.7	=	860.55	(82)
Rooflights 0.9x	1	x	8.42	x	157	x	0.63	x	0.7	=	524.68	(82)
Rooflights 0.9x	1	x	2.25	x	157	x	0.63	x	0.7	=	420.61	(82)
Rooflights 0.9x	1	x	3.45	x	157	x	0.63	x	0.7	=	429.96	(82)
Rooflights 0.9x	1	x	2.35	x	157	x	0.63	x	0.7	=	146.44	(82)
Rooflights 0.9x	1	x	6.6	x	157	x	0.63	x	0.7	=	411.27	(82)

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Rooflights 0.9x	1	x	3.14	x	115	x	0.63	x	0.7	=	143.32	(82)
Rooflights 0.9x	1	x	28.56	x	115	x	0.63	x	0.7	=	1303.58	(82)
Rooflights 0.9x	1	x	13.81	x	115	x	0.63	x	0.7	=	630.34	(82)
Rooflights 0.9x	1	x	8.42	x	115	x	0.63	x	0.7	=	384.32	(82)
Rooflights 0.9x	1	x	2.25	x	115	x	0.63	x	0.7	=	308.09	(82)
Rooflights 0.9x	1	x	3.45	x	115	x	0.63	x	0.7	=	314.94	(82)
Rooflights 0.9x	1	x	2.35	x	115	x	0.63	x	0.7	=	107.26	(82)
Rooflights 0.9x	1	x	6.6	x	115	x	0.63	x	0.7	=	301.25	(82)
Rooflights 0.9x	1	x	3.14	x	66	x	0.63	x	0.7	=	82.25	(82)
Rooflights 0.9x	1	x	28.56	x	66	x	0.63	x	0.7	=	748.14	(82)
Rooflights 0.9x	1	x	13.81	x	66	x	0.63	x	0.7	=	361.76	(82)
Rooflights 0.9x	1	x	8.42	x	66	x	0.63	x	0.7	=	220.57	(82)
Rooflights 0.9x	1	x	2.25	x	66	x	0.63	x	0.7	=	176.82	(82)
Rooflights 0.9x	1	x	3.45	x	66	x	0.63	x	0.7	=	180.75	(82)
Rooflights 0.9x	1	x	2.35	x	66	x	0.63	x	0.7	=	61.56	(82)
Rooflights 0.9x	1	x	6.6	x	66	x	0.63	x	0.7	=	172.89	(82)
Rooflights 0.9x	1	x	3.14	x	33	x	0.63	x	0.7	=	41.13	(82)
Rooflights 0.9x	1	x	28.56	x	33	x	0.63	x	0.7	=	374.07	(82)
Rooflights 0.9x	1	x	13.81	x	33	x	0.63	x	0.7	=	180.88	(82)
Rooflights 0.9x	1	x	8.42	x	33	x	0.63	x	0.7	=	110.28	(82)
Rooflights 0.9x	1	x	2.25	x	33	x	0.63	x	0.7	=	88.41	(82)
Rooflights 0.9x	1	x	3.45	x	33	x	0.63	x	0.7	=	90.37	(82)
Rooflights 0.9x	1	x	2.35	x	33	x	0.63	x	0.7	=	30.78	(82)
Rooflights 0.9x	1	x	6.6	x	33	x	0.63	x	0.7	=	86.44	(82)
Rooflights 0.9x	1	x	3.14	x	21	x	0.63	x	0.7	=	26.17	(82)
Rooflights 0.9x	1	x	28.56	x	21	x	0.63	x	0.7	=	238.04	(82)
Rooflights 0.9x	1	x	13.81	x	21	x	0.63	x	0.7	=	115.1	(82)
Rooflights 0.9x	1	x	8.42	x	21	x	0.63	x	0.7	=	70.18	(82)
Rooflights 0.9x	1	x	2.25	x	21	x	0.63	x	0.7	=	56.26	(82)
Rooflights 0.9x	1	x	3.45	x	21	x	0.63	x	0.7	=	57.51	(82)
Rooflights 0.9x	1	x	2.35	x	21	x	0.63	x	0.7	=	19.59	(82)
Rooflights 0.9x	1	x	6.6	x	21	x	0.63	x	0.7	=	55.01	(82)

Solar gains in watts, calculated for each month

(83)m = Sum(74)m ... (82)m

(83)m= 5929.81 11147.71 17581.44 24948.2 30296.92 30969.89 29497.57 25465.32 20175.74 12992.18 7304.19 4938.26 (83)

Total gains – internal and solar (84)m = (73)m + (83)m , watts

(84)m= 9228.69 14427.08 20727.52 27882.05 33000.38 33477.59 31898.39 27892.91 22732.29 15761.35 10309.64 8135.06 (84)

7. Mean internal temperature (heating season)

Temperature during heating periods in the living area from Table 9, Th1 (°C)

21 (85)

Utilisation factor for gains for living area, h1,m (see Table 9a)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
(86)m=	0.99	0.97	0.94	0.87	0.77	0.65	0.54	0.6	0.79	0.93	0.98	0.99

(86)

SAP WorkSheet: New dwelling as built

Mean internal temperature in living area T1 (follow steps 3 to 7 in Table 9c)

(87)m=	16.5	16.94	17.72	18.77	19.67	20.37	20.69	20.61	20	18.77	17.49	16.5	(87)
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Temperature during heating periods in rest of dwelling from Table 9, Th2 (°C)

(88)m=	19.06	19.07	19.09	19.15	19.17	19.23	19.23	19.24	19.21	19.17	19.14	19.11	(88)
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Utilisation factor for gains for rest of dwelling, h2,m (see Table 9a)

(89)m=	0.98	0.96	0.92	0.84	0.71	0.54	0.37	0.44	0.7	0.9	0.97	0.99	(89)
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Mean internal temperature in the rest of dwelling T2 (follow steps 3 to 7 in Table 9c)

(90)m=	13.47	14.1	15.19	16.67	17.86	18.76	19.09	19.05	18.35	16.71	14.89	13.47	(90)
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$$fLA = \text{Living area} \div (4) = 0.06 \quad (91)$$

Mean internal temperature (for the whole dwelling) = $fLA \times T1 + (1 - fLA) \times T2$

(92)m=	13.66	14.28	15.35	16.8	17.98	18.86	19.19	19.15	18.46	16.84	15.05	13.66	(92)
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Apply adjustment to the mean internal temperature from Table 4e, where appropriate

(93)m=	13.66	14.28	15.35	16.8	17.98	18.86	19.19	19.15	18.46	16.84	15.05	13.66	(93)
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8. Space heating requirement

Set Ti to the mean internal temperature obtained at step 11 of Table 9b, so that Ti,m=(76)m and re-calculate the utilisation factor for gains using Table 9a

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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Utilisation factor for gains, hm:

(94)m=	0.96	0.93	0.87	0.77	0.66	0.51	0.37	0.42	0.65	0.85	0.94	0.97	(94)
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Useful gains, hmGm , W = (94)m x (84)m

(95)m=	8893.22	13387.6	18007.06	21585.99	21643.45	17116.83	11748.38	11845.78	14827.2	13395.84	9724.68	7896.03	(95)
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Monthly average external temperature from Table 8

(96)m=	4.3	4.9	6.5	8.9	11.7	14.6	16.6	16.4	14.1	10.6	7.1	4.2	(96)
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Heat loss rate for mean internal temperature, Lm , W = [(39)m x [(93)m – (96)m]

(97)m=	54955.23	54521.15	50898.47	43286.06	34080.49	22121.88	13457.51	14131.11	23007.32	33877.03	43987.38	53377.19	(97)
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Space heating requirement for each month, kWh/month = $0.024 \times [(97)m - (95)m] \times (41)m$

(98)m=	34270.14	27641.75	24471.21	15624.05	9253.16	0	0	0	0	15238.01	24669.14	33837.99	
Total per year (kWh/year) = Sum(98) _{1...5,9...12} =												185005.44	(98)

Space heating requirement in kWh/m²/year

76.89	(99)
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8c. Space cooling requirement

Calculated for June, July and August. See Table 10b

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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Heat loss rate Lm (calculated using 25°C internal temperature and external temperature from Table 10)

(100)m=	0	0	0	0	0	48766.77	38390.86	39091.42	0	0	0	0	(100)
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Utilisation factor for loss hm

(101)m=	0	0	0	0	0	0.56	0.63	0.58	0	0	0	0	(101)
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Useful loss, hmLm (Watts) = (100)m x (101)m

(102)m=	0	0	0	0	0	27512.51	24120.55	22592.47	0	0	0	0	(102)
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Gains (solar gains calculated for applicable weather region, see Table 10)

(103)m=	0	0	0	0	0	37680.64	35909.27	31387.13	0	0	0	0	(103)
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Space cooling requirement for month, whole dwelling, continuous (kWh) = $0.024 \times [(103)m - (102)m] \times (41)m$

set (104)m to zero if (104)m < 3 x (98)m

(104)m=	0	0	0	0	0	0	8770.8	6543.22	0	0	0	0	
Total = Sum(104) =												15314.02	(104)

SAP WorkSheet: New dwelling as built

Cooled fraction	f C = cooled area ÷ (4) =											0.67	(105)		
Intermittency factor (Table 10b)															
(106)m=	0	0	0	0	0	0.25	0.25	0.25	0	0	0	0	Total = Sum(104) =	0	(106)
Space cooling requirement for month = (104)m × (105) × (106)m															
(107)m=	0	0	0	0	0	0	1458.16	1087.82	0	0	0	0	Total = Sum(107) =	2545.97	(107)
Space cooling requirement in kWh/m²/year	(107) ÷ (4) =											1.06	(108)		

9b. Energy requirements – Community heating scheme

This part is used for space heating, space cooling or water heating provided by a community scheme.

Fraction of space heat from secondary/supplementary heating (Table 11) '0' if none

0.1 (301)

Fraction of space heat from community system 1 – (301) =

0.9 (302)

The community scheme may obtain heat from several sources. The procedure allows for CHP and up to four other heat sources; the latter includes boilers, heat pumps, geothermal and waste heat from power stations. See Appendix C.

Fraction of heat from Community CHP

0.28 (303a)

Fraction of community heat from heat source 2

0.72 (303b)

Fraction of total space heat from Community CHP

(302) × (303a) = 0.25 (304a)

Fraction of total space heat from community heat source 2

(302) × (303b) = 0.65 (304b)

Factor for control and charging method (Table 4c(3)) for community heating system

1 (305)

Distribution loss factor (Table 12c) for community heating system

1 (306)

Space heating

kWh/year

Annual space heating requirement

185005.44

Space heat from Community CHP

(98) × (304a) × (305) × (306) = 46621.37 (307a)

Space heat from heat source 2

(98) × (304b) × (305) × (306) = 119883.53 (307b)

Efficiency of secondary/supplementary heating system in % (from Table 4a or Appendix E)

100 (308)

Space heating requirement from secondary/supplementary system

(98) × (301) × 100 ÷ (308) = 18500.54 (309)

Water heating

Annual water heating requirement

4466.13

If DHW from community scheme:

Water heat from Community CHP

(64) × (303a) × (305) × (306) = 1250.52 (310a)

Water heat from heat source 2

(64) × (303b) × (305) × (306) = 3215.61 (310b)

Electricity used for heat distribution

0.01 × [(307a)...(307e) + (310a)...(310e)] = 1709.71 (313)

Cooling System Energy Efficiency Ratio

9.45 (314)

Space cooling (if there is a fixed cooling system, if not enter 0)

= (107) ÷ (314) = 269.42 (315)

Electricity for pumps and fans within dwelling (Table 4f):

mechanical ventilation - balanced, extract or positive input from outside

0 (330a)

warm air heating system fans

0 (330b)

pump for solar water heating

0 (330g)

Total electricity for the above, kWh/year

=(330a) + (330b) + (330g) = 0 (331)

SAP WorkSheet: New dwelling as built

Energy for lighting (calculated in Appendix L) 2588.62 (332)

10b. Fuel costs – Community heating scheme

	Fuel kWh/year	Fuel Price (Table 12)	Fuel Cost £/year
Space heating from CHP	(307a) x	2.97 x 0.01 =	1384.65 (340a)
Space heating from heat source 2	(307b) x	4.24 x 0.01 =	5083.06 (340b)
Space heating (secondary)	(309) x	13.19 x 0.01 =	2440.22 (341)
Water heating from CHP	(310a) x	2.97 x 0.01 =	37.14 (342a)
Water heating from heat source 2	(310b) x	4.24 x 0.01 =	136.34 (342b)
Space cooling (community cooling system)	(315)	13.19 x 0.01 =	35.54 (348)
Pumps and fans	(331)	13.19 x 0.01 =	0 (349)
Energy for lighting	(332)	13.19 x 0.01 =	341.44 (350)
Additional standing charges (Table 12)			120 (351)
Total energy cost	= (340a)...(342e) + (345)...(354) =		9578.4 (355)

11b. SAP rating - Community heating scheme

Energy cost deflator (Table 12)	0.42 (356)
Energy cost factor (ECF) [(355) x (356)] ÷ [(4) + 45.0] =	1.64 (357)
SAP rating (section12)	77.1 (358)

12b. CO2 Emissions – Community heating scheme

Electrical efficiency of CHP unit								30.1	(361)
Heat efficiency of CHP unit								62.3	(362)

SAP WorkSheet: New dwelling as built

CO2 associated with electricity for pumps and fans within dwelling	(331)) x	0.52	=	0	(378)
CO2 associated with electricity for lighting	(332))) x	0.52	=	1343.49	(379)
Total CO2, kg/year	sum of (376)...(382) =			44292.26	(383)
Dwelling CO2 Emission Rate	(383) ÷ (4) =			18.41	(384)
EI rating (section 14)				75.78	(385)

13b. Primary Energy – Community heating scheme

Electrical efficiency of CHP unit				30.1	(361)
Heat efficiency of CHP unit				62.3	(362)
		Energy kWh/year	Primary factor	P.Energy kWh/year	
Space heating from CHP)	(307a) × 100 ÷ (362) =	74833.66	x	91297.07	(363)
less credit emissions for electricity	–(307a) × (361) ÷ (362) =	22524.93	x	-69151.54	(364)
Water heated by CHP	(310a) × 100 ÷ (362) =	2007.25	x	2448.84	(365)
less credit emissions for electricity	–(310a) × (361) ÷ (362) =	604.18	x	-1854.84	(366)
Efficiency of heat source 2 (%)	If there is CHP using two fuels repeat (363) to (366) for the second fuel			95.9	(367b)
Energy associated with heat source 2	[(307b)+(310b)] x 100 ÷ (367b) x		1.22	156601.62	(368)
Electrical energy for heat distribution	[(313) x			5248.81	(372)
Total Energy associated with community systems	(363)...(366) + (368)...(372)			184589.96	(373)
<i>if it is negative set (373) to zero (unless specified otherwise, see C7 in Appendix C)</i>				184589.96	(373)
Energy associated with space heating (secondary)	(309) x		3.07	56796.67	(374)
Energy associated with water from immersion heater or instantaneous heater	(312) x		1.22	0	(375)
Total Energy associated with space and water heating	(373) + (374) + (375) =			241386.63	(376)
Energy associated with space cooling	(315) x		3.07	827.1	(377)
Energy associated with electricity for pumps and fans within dwelling	(331)) x		3.07	0	(378)
Energy associated with electricity for lighting	(332))) x		3.07	7947.06	(379)
Total Primary Energy, kWh/year	sum of (376)...(382) =			250160.79	(383)