

SOLUTIONS...

18 ♦ Chapter 1 - Measuring Systems, Surface Area, and Volume

3. Find the equivalent measurement. (Answers to three decimal places.)

a) 110 yds = 100.6 m (The length of a Canadian football field.)

b) 30 cm = 11.8 in (The length of a ruler.)

c) 533 km = 343 mi (The distance from Edmonton to Saskatoon.)

d) 6 ft, 1 in = 1.9 m (The height of this author.)

e) 70 mi/hr = 112.7 km/hr (The speed limit on the Interstate Highway in the United States.)

f) 110 km/hr = 68.4 mi/hr (The speed limit on sections of the Trans Canada Highway.)

g) 1253 mi = 2016.5 km (The distance from Vancouver to Los Angeles.)

h) 50 km/hr = 31.1 mi/hr (The speed limit on most city streets.)

i) 6 ft, 3 in = 1.9 m (The height of basketball player Steve Nash.)

j) 6.5 mm = 0.28 in (The thickness of a pencil.)

k) 1815.4 ft = 0.55 km (The height of the CN tower in Toronto.)

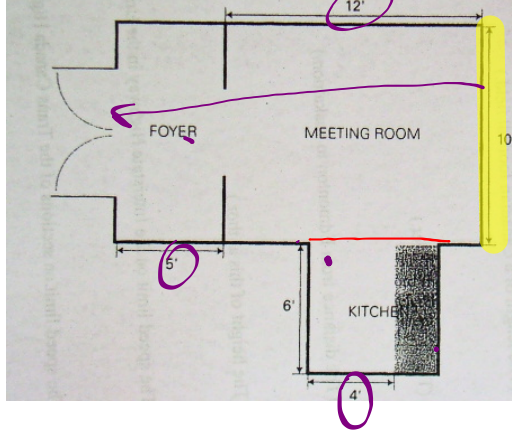
l) 94.51 million miles = 152.1 million km (The distance from the Earth to the Sun.)

m) 261 million km = 162.2 million miles (The maximum distance between Earth and Venus.)

HW Questions

8

Dejan was hired to lay vinyl flooring in the kitchen, meeting room, and foyer of the local Friendship Centre. He used the measurements in the diagram below to estimate the job. The flooring material comes in rolls 10 ft wide and is sold by the running foot, and Dejan needs to purchase enough flooring to ensure the pattern will match in all three rooms. He will also add 15% to his order to compensate for wastage. One running foot of vinyl flooring costs \$12.50. Dejan estimates his labour charge will be \$560.00. What is the total estimate for vinyl flooring and labour?



Need...
 $\frac{17}{4}$
 $\frac{21}{1}$ of material
 Waste...
 $21 \times 1.15 = 24.15$
 Get 25

Cost $25' \times 12.50$
 $+ 560$
\$ 872.50

4

Sandy has been asked to give an estimate for replacing a countertop in a client's kitchen. The countertop measures 2' x 6' and the client wants Sandy to install 4" x 4" tiles that cost \$3.50 each. Sandy has estimated her labour charge will be \$350.00. What is the total cost of tiles and labour?

$2' = 24''$
 $6' = 72''$
 18 tiles
 6 tiles
 $A = 24 \times 72 = 1728 \text{ in}^2$ OR
 $A_{\text{tile}} = 4 \times 4 = 16 \text{ in}^2$
 $\# \text{ of tiles} = \frac{1728}{16} = 108 \text{ tiles}$
 $\# \text{ of tiles} = 6 \times 18 = 108 \text{ tiles}$

Cost = $108 \times 3.50 + 350$
\$ 728

Converting Squared Units...

Option #1 - Convert BEFORE area calculation.

EX #1: How many squared metres?

$$A = 3.7 \times 1.2 = 4.44 \text{ m}^2$$

$$12 \text{ ft} \times \frac{1 \text{ m}}{3.2808 \text{ ft}} = 3.7 \text{ m}$$

$$4 \text{ ft} \times \frac{1 \text{ m}}{3.2808 \text{ ft}} = 1.2 \text{ m}$$

- 1 m = 1.0936 yd
- 1 m = 3.2808 ft
- 1 mi. = 1.6093 km
- 1 in. = 2.54 cm

Best

$$\boxed{y}^2 \text{ or } \boxed{x^2} \text{ or } \boxed{\wedge}^2$$

Option #2 - Convert AFTER area calculation.

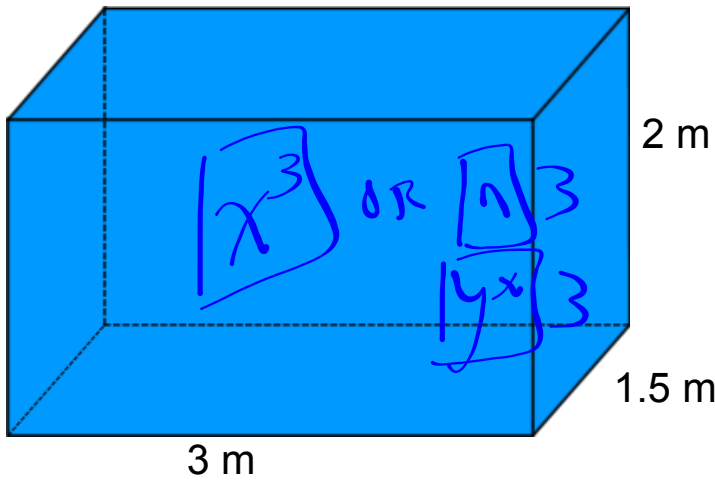
$$A = 12 \text{ ft} \times 4 \text{ ft} = 48 \text{ ft}^2$$

$$48 \text{ ft}^2 \times \frac{1 \text{ m}^2}{3.2808^2 \text{ ft}^2} = 4.46 \text{ m}^2$$

RULE: When converting squared units...
SQUARE THE CONVERTER!!!

What about cubed units???

EX #2: How many cubic yards?



$$V = 3 \times 2 \times 1.5$$

$$V = 9 \text{ m}^3$$

$$9 \text{ m}^3 \times \frac{1.0936 \text{ yd}^3}{1 \text{ m}^3} = 11.8 \text{ yd}^3$$

RULE: When converting cubed units...
CUBE THE CONVERTER!!!

MORE EXAMPLES...

1) $22 \text{ m}^2 = \underline{236.8} \text{ ft}^2$

$$22 \text{ m}^2 \times \frac{3.2808^2 \text{ ft}^2}{1 \text{ m}^2}$$

2) $1.75 \text{ mi}^2 = \underline{4.53} \text{ km}^2$

$$1.75 \text{ mi}^2 \times \frac{1.6093^2 \text{ km}^2}{1 \text{ mi}^2}$$

3) $2400 \text{ cm}^2 = \underline{372} \text{ in}^2$

$$2400 \text{ cm}^2 \times \frac{1 \text{ in}^2}{2.54^2 \text{ cm}^2}$$

4) $750 \text{ yd}^2 = \underline{627.1} \text{ m}^2$

$$750 \text{ yd}^2 \times \frac{1 \text{ m}^2}{1.0936^2 \text{ yd}^2}$$

5) $315 \text{ yd}^3 = \underline{240.8} \text{ m}^3$

$$315 \text{ yd}^3 \times \frac{1 \text{ m}^3}{1.0936^3 \text{ yd}^3}$$

6) $15 \text{ m}^3 = \underline{529.7} \text{ ft}^3$

$$15 \text{ m}^3 \times \frac{3.2808^3 \text{ ft}^3}{1 \text{ m}^3} =$$


7) $0.5 \text{ mi}^3 = \underline{2.08} \text{ km}^3$

$$0.5 \text{ mi}^3 \times \frac{1.6093^3 \text{ km}^3}{1 \text{ mi}^3} =$$

8) $2450 \text{ mm}^3 = \underline{0.1} \text{ in}^3$

$$2450 \text{ mm}^3 \times \frac{1 \text{ cm}^3}{10^3 \text{ mm}^3} \times \frac{1 \text{ in}^3}{2.54^3 \text{ cm}^3}$$

HOMWORK...

 Worksheet - Converting Squared and Cubed Units.docx

Attachments

Worksheet - Converting Squared and Cubed Units.docx