Ch 3 Review Key

CHAPTER TEST

1. The tallest person in the world was Robert Pershing Wadlow. At the time of his death in 1940, he was 8′11.1″ tall. The record for the world's shortest adult was held by He Pingping; at the time of his death in 2010, he was 2′4.7″.

a) What is the difference between their heights in feet and inches?

tallest: 8′11.1″
↳ 8′ × 12 = 96″
96″ + 11.1″ = 107.1″

Shortest: 2′4.7″
2′ × 12 = 24″
24″ + 4.7″ = 28.7″

107.1″ − 28.7″ = 78.4″

6′ = 72″

78.4″ = 6′6.2″

b) Find the height of each man in metres.

tallest
107.1″ × $\frac{2.54\text{ cm}}{1\text{ in}}$ = 272.034 cm

272.034 cm ÷ $\frac{100\text{ cm}}{1\text{ m}}$

= 2.72 m

Shortest
28.7″ × 2.54 = 72.898 cm

72.898 cm ÷ 100

= 0.73 m

c) What is the difference between their heights in metres?

2.72 m − 0.73 m = 1.99 m difference

2. While driving in the United States, Franklin sees that the height of a tunnel is marked as 10′6″. He knows that his truck is 3.3 m tall. Can he drive through the tunnel?

10.5′ × 0.3048 m = 3.2004 m
(truck height)

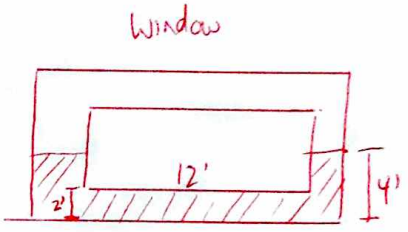
Since the tunnel is 3.3 m high, the truck will fit

3. Rachelle is buying panelling for wainscotting for her hall. The panels are 4′ by 8′. The wainscotting will be 4′ high and the room is 19′ by 13′. There are two doors measuring 30″ wide, and one 12′ window that will only need a 2′ panel of wainscotting under it. How many panels will she need, assuming no wastage?

Perimeter: (2×19) + (2×13) = 64′

Door: 30″ → 2.5′

Window: 12′ ÷ 2 = 6′



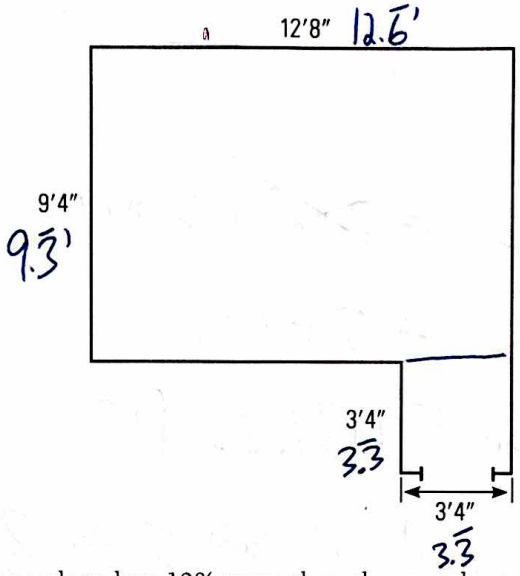
for window section we only need half amount of wainscotting

Total: 64′ − 2.5′ − 6
= 55.5′

55.5′ ÷ 8 ft/panel = 6.9 panels

7 panels of wainscotting

4. Mario is laying tiles for the patio below and planting daffodils around the perimeter.



$12.\overline{6}' \times 9.\overline{3}' = 118.\overline{2}\ ft^3$

$3.\overline{3} \times 3.\overline{3} = 11.\overline{1}\ ft^3$

a) Assuming he needs to buy 10% more than the area due to wastage, how many 12" by 12" tiles will he need?

$1' \times 1' = 1\ ft^2$ for each tile

$118.\overline{2}\ ft^3 + 11.\overline{1}\ ft^3 = 129.\overline{3}\ ft^3$ total

$\times 1.10$ (10% extra)

$= 142.2\overline{6}\ ft^3$

143 tiles (since tiles are $1\ ft^2$)

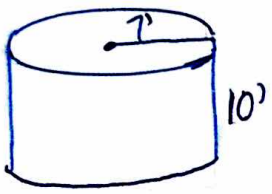
b) How many daffodils will he plant around the perimeter if there are no daffodils along the entrance and he plants them approximately 1 foot apart?

Perimeter: $3.\overline{3} + 9.\overline{3}\ 12.\overline{6} + 9.\overline{3} + 9.\overline{3} + 3.\overline{3}$

$= 47.\overline{3}\ ft^3$

48 daffodils (since flowers are 1ft apart)

5. Louise needs to give the exterior of a cylindrical granary 2 coats of paint. If the granary is 10 feet tall and has a diameter of 14 feet, and paint covers approximately 375 square feet per gallon, how many gallons of paint will she need to buy? Assume that she can only buy full gallons, and will not be painting the roof.



$SA = 2\pi r^2 + 2\pi rh$

$= 2\pi(7)(10)$

$SA = 439.82\ ft^3$

2 coats of paint so → 2×439.82

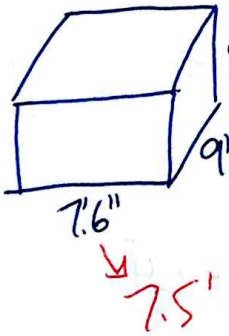
$= 879.64\ ft^2$ total

$879.64 \div 375$

$= 2.35$ cans → 3 cans of paint

6. Roberto is painting the exterior of a rectangular storage unit to protect it from rusting. If the unit is 7′6″ wide, 9′8″ long, and 8′2″ tall, what is the surface area in square feet? Roberto will be painting the sides and the roof.

↳ no bottom



$SA = 2(9.6 \times 8.16) + 2(7.5' \times 8.16) + (9.6 \times 7.5)$

$SA = 157.8\ ft^2 + 122.5\ ft^2 + 72.5\ ft^2$

$SA = 352.8\ ft^2$

7. A soccer field is 109 m long and 73 m wide. American soccer league rules state that a field should be no more than 120 yards long and 80 yards wide. Is the field within the specified dimensions?

109 m → yards

109 m × 1.0936 = 119.2 yd < 120 yd

73 m × 1.0936 = 79.8 yd < 80 yd

Yes the field is within the specified dimensions.

8. What is the volume of water in a fish tank that is 90 cm by 55 cm if it is filled to a height of 32 cm?

$V = 90 \times 55 \times 32$

$= 158\,400\ cm^3$

9. A driveway is 36 ft long and 10 ft wide, and will be covered in gravel that is 2 in deep. How many cubic yards of gravel will be needed?

2 ÷ 12 = 0.1$\bar{6}$ ft

$36 \times 10 \times 0.1\bar{6} = 60\ ft^3$

$60\ ft^3 \div 3^3 = 2.\bar{2}\ yd^3$

They need $2.\bar{2}\ yds^3$ of gravel (but most likely will have to buy $3\ yd^3$)

10. In the US, milk is commonly sold in jugs of 1 gal, $\frac{1}{2}$ gal, 1 quart, and $\frac{1}{2}$ pint. What are the equivalent sizes in millilitres? (a) (b) (c) (d) (Change each to mL)

a) $1\text{ gal} \times \frac{3.8\text{ L}}{1\text{ gal}} = 3.8\text{ L} \times 1000 = 3800\text{ mL}$

b) $\frac{1}{2}$ gal $\rightarrow \frac{3800\text{ mL}}{2} = 1900\text{ mL}$

c) $1\text{ quart} \times \frac{1\text{ gal}}{4\text{ quart}} = 0.25\text{ gal} \Rightarrow 0.25(3800\text{ mL}) = 950\text{ mL}$

d) $\frac{1}{2}$ pint $= 8$ US fl oz $\rightarrow 8\text{ fl oz} \times \frac{29.6\text{ mL}}{1\text{ fl oz}} = 236.8\text{ mL}$

11. A recipe for pumpkin cheesecake calls for a 5-US fl oz can of evaporated milk.

a) What is this in cups?

$5\text{ US fl oz} \times \frac{29.6\text{ mL}}{1\text{ oz}} = 148\text{ ml}$

$148\text{ mL} \div \frac{236.558\text{ mL}}{1\text{ cup (US)}} = 0.625\text{ cup (US)}$

OR

$148\text{ mL} \div \frac{250\text{ mL}}{1\text{ cup (metric)}} = 0.592\text{ cup (metric)}$

b) What is this in mL?

$5\text{ US fl oz} \times \frac{29.6\text{ mL}}{1\text{ oz}} = 148\text{ mL}$