

Unit 2 Study Guide Key

1. Write the ratios:

$$\begin{aligned}
 X:Y &\rightarrow \boxed{7:3} \\
 Y:X &\rightarrow \boxed{3:7} \\
 Y+X:Z &\rightarrow 10:4 \rightarrow \boxed{5:2} \\
 Z-Y:X &\rightarrow \boxed{1:7}
 \end{aligned}$$

2. 3 movies for \$4.99

$$\frac{4.99}{3} = \boxed{\$1.66/\text{movie}}$$

3. 25 students use 120 sheets

$$\frac{120}{25} = \boxed{4.8 \text{ sheets/student}}$$

4. 8 miles in 1.5 hours

$$\frac{8}{1.5} = \boxed{5.3 \text{ mi/hr}}$$

5. 3 km = _____ m
 K H D M D C M
 G
 L
 3 km move decimal 3 →
 ↑ start ↑ change

$$\begin{aligned}
 &3.000 \\
 3 \text{ km} &= \boxed{3000 \text{ m}}
 \end{aligned}$$

6. 5 yds = _____ ft

$$\frac{5 \text{ yds}}{1} \cdot \frac{3 \text{ ft}}{1 \text{ yds}} = \boxed{15 \text{ ft}}$$

7. 72 cm = _____ km

$$\begin{aligned}
 &0.0072 \\
 &\boxed{.00072 \text{ km}}
 \end{aligned}$$

8. 700 words in 50 min.

How many per hour?

$$\begin{aligned}
 \frac{700 \text{ words}}{50 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} &= \frac{42000}{50} \\
 &\boxed{840 \text{ words/hr}}
 \end{aligned}$$

9. 65 miles per hour?

How many yds/min?

$$\begin{aligned}
 \frac{65 \text{ mi}}{1 \text{ hr}} \cdot \frac{1760 \text{ yds}}{1 \text{ mi}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} &= \frac{114,400}{60} \\
 &\boxed{1906.7 \text{ yds/min}}
 \end{aligned}$$

$$\begin{aligned}
 10. \quad \frac{5}{4} &\rightarrow \frac{x}{12} & \frac{4}{x} &= \frac{60}{4} \\
 & & \boxed{x} &= 15
 \end{aligned}$$

$$\begin{aligned}
 11. \quad \frac{8}{2x} &= \frac{15}{60} & \frac{30}{30}x &= \frac{480}{30} \\
 & & \boxed{x} &= 16
 \end{aligned}$$

$$\begin{aligned}
 12. \quad \frac{(x+10)}{10} &\rightarrow \frac{18}{12} & 12(x+10) &= 180 \\
 & & 12x + 120 &= 180 \\
 & & -120 & -120 \\
 & & 12x &= 60 \\
 & & \frac{12}{12} & \frac{60}{12} \\
 & & \boxed{x} &= 5
 \end{aligned}$$



13. $\frac{3}{(x-2)} = \frac{-4}{2x}$ $\frac{-4(x-2)}{2x} = 6x$

$$\frac{-4x+8}{2x} = 6x$$

$$\frac{-4x+8}{2} = 12x$$

$$-4x+8 = 24x$$

$$8 = 28x$$

$$\frac{8}{28} = x$$

$$\frac{4}{7} = x$$

17. 23 is what % of 80

$$\frac{23}{80} = \frac{\%}{100} \rightarrow \frac{23}{80} \times \frac{x}{100}$$

$$\frac{80x}{80} = \frac{2300}{80}$$

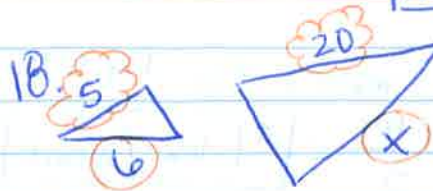
$$x = 28.75\%$$

14. What is 23% of 46?

$$\frac{23}{100} = \frac{\%}{100} \rightarrow \frac{x}{46} = \frac{23}{100}$$

$$\frac{100x}{100} = \frac{1058}{100}$$

$$x = 10.6\%$$

18. 

$$\frac{5}{6} = \frac{20}{x}$$

$$\frac{5x}{6} = \frac{120}{6}$$

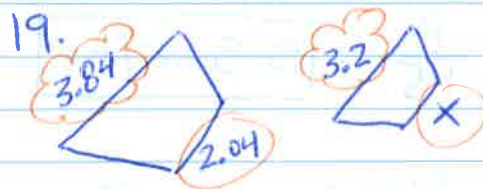
$$x = 24 \text{ in}$$

15. 37.5 is 60% of what #?

$$\frac{37.5}{x} = \frac{60}{100} \rightarrow \frac{37.5}{x} \times \frac{100}{100}$$

$$\frac{60x}{60} = \frac{3750}{60}$$

$$x = 62.5$$



$$\frac{3.84}{2.04} = \frac{3.2}{x}$$

$$\frac{3.84x}{3.84} = \frac{6.528}{3.84}$$

$$x = 1.7 \text{ m}$$

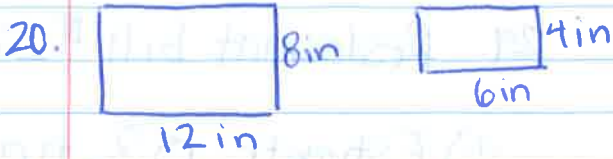
16. What % of 175 is 35?

$$\frac{35}{175} = \frac{\%}{100} \rightarrow \frac{35}{175} \times \frac{x}{100}$$

$$\frac{175x}{175} = \frac{3200}{175}$$

$$x = 18.3\%$$





a.) side lengths
 $8:4$ or $12:6$
 $2:1$ or $1:2$

b.) perimeter
 - big per = $12+12+8+8 = 40$ in
 - little per = $6+6+4+4 = 20$ in
 $40:20$ $2:1$ or $1:2$

c.) area
 - big area = $12 \cdot 8 = 96$
 - little area = $6 \cdot 4 = 24$
 $96:24$ $4:1$ or $1:4$

21. red to blue is 4:7.
 If 16 red, how many blue?

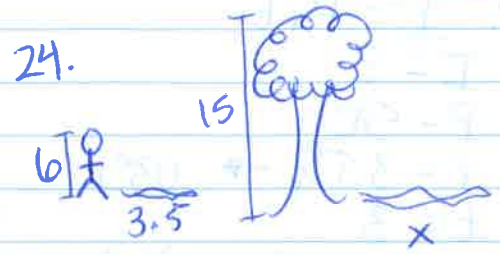
red $\frac{4}{7} = \frac{16}{x}$
 blue
 $4x = 112$
 $x = 28$ blue marbles

22. map scale is 1 in : 500 mi.
 If 875 mi, how far on map?

in $\frac{1}{500} = \frac{x}{875}$
 mi
 $500x = 875$
 $x = 1.75$ in

23. 45% have jobs. How many if there's 500 total?

$\frac{is}{of} = \frac{\%}{100}$ $\frac{x}{500} = \frac{45}{100}$
 $100x = 22500$
 $x = 225$ students have jobs



$\frac{6}{3.5} = \frac{15}{x}$
 $6x = 52.5$
 $x = 8.75$ ft shadow

25. Makes 8% commission.
 What's earned from \$210,000 sales?

$\frac{is}{of} = \frac{\%}{100}$ $\frac{x}{210,000} = \frac{8}{100}$
 $100x = 168,000$
 $x = 16,800$



26. $I = Prt$

$I = ?$

$P = 2000$

$r = 3.2\% \rightarrow .032$

$t = 5$

$I = (2000)(.032)(5)$

$I = \$320$

27. $I = Prt$

$I = ?$

$P = 50$

$r = 3.5\% \rightarrow .035$

$t = 3$

$I = (50)(.035)(3)$

$I = \$5.25$

28. bike costs \$220, but 60% off.

$\frac{\text{is}}{\text{of}} = \frac{\%}{100}$

$\frac{x}{220} = \frac{60}{100}$

$\frac{100x}{100} = \frac{13200}{100}$

$x = \$132$ off

$220 - 132 = \$88$

or

60% off means you're paying for 40%

$\frac{\text{is}}{\text{of}} = \frac{\%}{100}$

$\frac{x}{220} = \frac{40}{100}$

$\frac{100x}{100} = \frac{8800}{100}$

$x = \$88$

29. Restaurant bill \$27.95

a.) Estimate 15% tip

$\frac{\text{is}}{\text{of}} = \frac{\%}{100}$

$\frac{x}{28} = \frac{15}{100}$

$\frac{100x}{100} = \frac{420}{100}$

$x = \$4.20$ tip

b.) total cost?

\$27.95

+\$4.20

32.15

$\$32.15$ total