Classroom Copy

Chapter 1 Lesson #1

Obj: Solving Equations (2-1, 2-2, & 2-3)

Vocabulary:

(A) Equation - a statement that 2 mathematical expressions are equal

$5x+2=5x+4-2$

(B) Solution - Any value for a variable that makes the equation true.

(C) Addition property of Equality - If $a=b$, then $a+c=b+c$.

Ex: $5=5$, then $5+3=5+3$

$x=x$, then $x+3=x+3$

(D) Subtraction Property of Equality - If $a=b$, then $a-c=b-c$.

Ex: $6=6$, then $6-1=6-1$

(E) Multiplication Property of Equality - If $a=b$, then $ac=bc$.

Ex:

(F) Division Property of Equality - If $a=b$, then $\frac{a}{c}=\frac{b}{c}$

Ex:

Examples: In #1-9, solve each equation.

1. $9x+2=20$

$-2 \quad -2$

$\frac{9x}{9}=\frac{18}{9}$

$x=2$

2. $4(m-7)=8$ (Distributive)

$4m-28=8$

$+28 \quad +28$

$\frac{4m}{4}=\frac{36}{4}$

$m=9$

3. $\frac{2x}{5}-\frac{1}{2}=5$

$+\frac{1}{2} \quad +\frac{1}{2}$

$\frac{5}{2}\cdot\frac{2}{5}x=\frac{11}{2}\cdot\frac{5}{2}$

$x=\frac{55}{4}$

4. $4y+3-7y=19$ (* move variables first *)

$-3y+3=19$

$-3 \quad -3$

$\frac{-3y}{-3}=\frac{16}{-3}$

$y=\frac{-16}{3}$

5. $7y-4=9+3y$

$-3y \quad -3y$

$4y-4=9$

$+4 \quad +4$

$\frac{4y}{4}=\frac{13}{4}$

$y=13/4$

6. $30=7-(b-12)$

$30=7-b+12$

$30=19-b$

$-19 \quad -19$

$\frac{11}{-1}=\frac{-b}{-1}$

$-11=b$

7. $2c + 7(c - 1) = -14 + 5c$

$2c+7c-7 = -14+5c$

$9c-7 = -14+5c$

$-5c \quad -5c$

$4c-7 = -14$

$+7 \quad +7$

$\frac{4c}{4} = \frac{-7}{4}$

$c = -\frac{7}{4}$

8. $x + 4 - 6x = 6 - 5x - 2$

$-5x+4 = 4-5x$

$+5x \quad +5x$

$4 = 4$

infinite solutions

9. $4 - (x + 6) = -x + 2$

$4-x-6 = -x+2$

$-x-2 = -x+2$

$+x \quad +x$

$-2 \neq 2$

No Solutions

10. Alex belongs to Ski Club. In this club, students can buy a student discount card for $34. This card allows them to ski for $13 each. After one year, Alex has spent $99. Write and solve an equation to find how many times Alex went skiing this year.

$34+13x = 99$

$-34 \quad -34$

$\frac{13x}{13} = \frac{65}{13}$

$x = 5$

5 times

11. Sara paid $50 to become a member at a gym. She must also pay a monthly fee. After 1 year, Sara had paid $314. How much is her monthly fee?

$50+12x = 314$

$-50 \quad -50$

$\frac{12x}{12} = \frac{264}{12}$

$x = \$22/\text{month}$

12. Two cell phone companies charge the rates as shown in the chart. After how many minutes will the companies charge the same amount for one month?

set = to each other

Company	Charges
Verizon	$9.99/month plus $0.03 per min
Alltel	$56 per month

$9.99+.03x = 56$

$-9.99 \quad -9.99$

$\frac{.03x}{.03} = \frac{46.01}{.03}$

$x = 1533.6$

≈ 1534 min

13. At Speedway, you can buy a Slushie club card for $5.00 and then pay $0.75 per slushie. At BP, you can buy a Slushie club card for $10 and then pay $0.50 per slushie. After how many slushies will you pay the same amount. What amount will you pay?

$5+.75x = 10+.5x$

$-.5x \quad -.5x$

$5+.25x = 10$

$-5 \quad -5$

$\frac{.25x}{.25} = \frac{5}{.25}$

$x = 20$ slushies

$5+.75(20) = 20$

$10+.5(20) = 20$

$20

Chapter 1 Lesson #2

Obj: Solving for a Variable (2-5)

Vocabulary:

Formula - equation that states a rule for a relationship among quantities

Ex: $y=mx+b$ $\quad \emptyset=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$ $\quad a^2+b^2=c^2$ $\quad A=\frac{1}{2}h(b_1+b_2)$

Examples: In #1-20, solve for the indicated variable in the given formula.

1. $d=rt$ for r

$\frac{d}{t}=\frac{rt}{t}$

$\boxed{\frac{d}{t}=r}$

2. $5-b=2t$ for t

$\frac{5-b}{2}=\frac{2t}{2}$

$\boxed{\frac{5-b}{2}=t}$

3. $F=\frac{9}{5}C+32$ for C

$-32 \quad -32$

$F-32=\frac{9}{5}C$

$\frac{5}{9}\cdot$ $\quad \frac{5}{9}\cdot$

$\boxed{\frac{5}{9}(F-32)=C}$

4. $A=\frac{1}{2}bh$ for h

$2\cdot$ $\quad 2\cdot$

$2A=bh$

$\frac{2A}{b}=\frac{bh}{b}$

$\boxed{\frac{2A}{b}=h}$

5. $f=i-gt$ for i

$+gt \quad +gt$

$\boxed{f+gt=i}$

6. $D=\frac{m}{v}$ for v

$v\cdot$ $\quad v\cdot$

$Dv=m$

$\frac{Dv}{D}=\frac{m}{D}$

$\boxed{v=\frac{m}{D}}$

7. $s=\frac{w-10e}{m}$ for w

$m\cdot$ $\quad m\cdot$

$ms=w-10e$

$+10e \quad +10e$

$\boxed{ms+10e=w}$

8. $V=\frac{1}{3}Bh$ for h

$3\cdot$ $\quad 3\cdot$

$3V=Bh$

$\frac{3V}{B}=\frac{Bh}{B}$

$\boxed{\frac{3V}{B}=h}$

9. $e=mc^2$ for c

$\frac{e}{m}=\frac{mc^2}{m}$

$\sqrt{\frac{e}{m}}=\sqrt{c^2}$

$\boxed{\sqrt{\frac{e}{m}}=c}$

10. $A=ms^2$ for s

$\frac{A}{m}=\frac{ms^2}{m}$

$\sqrt{\frac{A}{m}}=\sqrt{s^2}$

$\boxed{\sqrt{\frac{A}{m}}=s}$

11. $S=\frac{d}{t}$ solve for t

$St=d$

$\frac{St}{S}=\frac{d}{S}$

$t=\frac{d}{S}$

12. V = lwh solve for w

$\frac{V}{lh}=\frac{lwh}{lh}$

$\frac{V}{lh}=w$

13. 5x + 2y = 10 solve for y

$-5x \quad -5x$

$\frac{2y}{2}=\frac{10-5x}{2}$

$y=5-\frac{5}{2}x$

14. $A=\frac{F-V}{T}$ Solve for F

$AT=F-V$

$+V \quad +V$

$AT+V=F$

15. $A = \pi r^2$ solve for r

$\frac{A}{\pi}=\frac{\pi r^2}{\pi}$

$\sqrt{\frac{A}{\pi}}=\sqrt{r^2}$

$\sqrt{\frac{A}{\pi}}=r$

16. $p=\frac{f}{a}$ solve for a

17. -5x + 4y = 10 solve for y

$+5x \quad +5x$

$\frac{4y}{4}=\frac{10+5x}{4}$

$y=\frac{5}{2}+\frac{5}{4}x$

18. 3x - 4y = 12 solve for y

$-3x \quad -3x$

$\frac{-4y}{-4}=\frac{12-3x}{-4}$

$y=-3+\frac{3}{4}x$

19. -x + 2y = 9 solve for x

20. 2x - y = 8 solve for y

$-2x \quad -2x$

$\frac{-1y}{-1}=\frac{8-2x}{-1}$

$y=-8+2x$

21. $A=\frac{1}{2}h(b_1+b_2)$ Solve for b_1

$\frac{2A}{h}=\frac{h(b_1+b_2)}{h}$

$\frac{2A}{h}=b_1+b_2$

$-b_2 \quad -b_2$

$\frac{2A}{h}-b_2=b_1$

Chapter 1 Lesson #3

Obj: Understand and be able to solve problems involving rates and converting between different rates. (2-5)

Vocabulary:

(A) Rate - Ratio w/ different units

Ex: $/HR miles/sec

(B) Unit Rate the second quantity is 1 (denominator)

Ex: $/1 HR miles/1 sec.

Examples:

1. Cory earns $52.50 in 7 hours. Find the unit rate (or how much he earns in 1 hr).

$$\frac{\$52.50}{7\text{ HR}} = \$7.50/\text{HR}$$

2. Takeru Kobayashi of Japan ate 53.5 hot dogs in 12 minutes to win a contest. Find the unit rate (or how many he ate per minute).

$$\frac{53.5\text{ H.D.}}{12\text{ min}} = 4.46\text{ H.D./min}$$

3. Jill can run 5.5 miles in 43 minutes. Find her unit rate.

$$\frac{5.5\text{ mi}}{43\text{ min}} = .13\text{ mi/min}$$

Vocabulary:

(C) Converting Rates - Changing from one rate to another

Examples: mi/HR to ft/sec. *use Conversion factors*

4. Convert 325 miles per hour to feet per minute.

$$\frac{325\text{ mi}}{1\text{ HR}} \cdot \frac{5280\text{ ft}}{1\text{ mi}} \cdot \frac{1\text{ HR}}{60\text{ min}} = \frac{1716000}{60} = 28{,}600\text{ ft/min}$$

5. Convert 52 ft per hour to inches per second. in/sec

$$\frac{52\text{ ft}}{1\text{ HR}} \cdot \frac{12\text{ in}}{1\text{ ft}} \cdot \frac{1\text{ HR}}{60\text{ min}} \cdot \frac{1\text{ min}}{60\text{ sec}} = \frac{624}{3600} = .173\text{ in/sec}$$

6. A cyclist travels 56 miles in 4 hours. What is the cyclist's speed in feet per second? $\frac{56\text{ mi}}{4\text{ HR}} \cdot \frac{1\text{ HR}}{3600\text{ sec}} \cdot \frac{5280\text{ ft}}{1\text{ mi}} = \frac{295680}{14400} = 20.53\ \text{ft/sec}$

7. A cheetah can run at a rate of 60 miles per hour in short bursts. What is this speed in feet per second? $\frac{60\text{ mi}}{1\text{ HR}} \cdot \frac{1\text{ HR}}{3600\text{ sec}} \cdot \frac{5280\text{ ft}}{1\text{ mi}} = \frac{316,800}{3600} = 88\ \text{ft/sec}$

8. Convert 13 gallons per minute to quarts per hour. (There are four quarts in a gallon.) $\frac{13\text{ gal}}{1\text{ min}} \cdot \frac{4\text{ Qt}}{1\text{ gal}} \cdot \frac{60\text{ min}}{1\text{ HR}} = \frac{3120}{1} = 3120\ \text{Qt/HR}$

9. Convert 32 km/hr to cm/min. $\frac{32\text{ km}}{1\text{ HR}} \cdot \frac{1\text{ HR}}{60\text{ min}} \cdot \frac{100,000\text{ cm}}{1\text{ km}} = \frac{3200000}{60} = 53333.\overline{3}\ \text{cm/min}$

K H D M D C M

Chapter 1 Lesson #4

Obj: Be able to solve geometric problems using ratios and proportions. (2-4 & 2-7)

1 km = 10,0000 cm

1 cm = .00001 km

Vocabulary:

(A) Ratio - Compares 2 numbers { $\frac{x}{y}$ x:y x to y

Ex:

(B) Proportion - two equal ratios (fraction form)

Ex: $\frac{a}{b} = \frac{c}{d}$ $\frac{3}{4} = \frac{9}{12}$

(C) Cross Products Property (or means extremes) - If $\frac{a}{b} = \frac{c}{d}$, then $ad = bc$

Ex:

cross multiplying

Examples: In #1-4, solve each proportion.

1. $\frac{y}{8}=\frac{-5}{2}$

$2y=-40$

$\frac{2y}{2}=\frac{-40}{2}$

$y=-20$

2. $\frac{5}{9}=\frac{3}{w}$

$5w=27$

$\frac{5w}{5}=\frac{27}{5}$

$w=27/5$

3. $\frac{8}{x+10}=\frac{4}{12}$

$4(x+10)=96$

$4x+40=96$

$-40\ \ -40$

$4x=56$

$\frac{4x}{4}=\frac{56}{4}$

$x=14$

4. $\frac{g+3}{5}=\frac{7}{4}$

$4(g+3)=35$

$4g+12=35$

$-12\ \ -12$

$\frac{4g}{4}=\frac{23}{4}$

$g=23/4$

5. The ratio of faculty members to students at a college is 1:15. If there are 675 students enrolled, how many faculty members are there?

$\frac{\text{fac}}{\text{stud}}$ $\frac{1}{15}=\frac{x}{675}$ $15x=675$

$x=$ 45 faculty

6. The ratio of games won to games lost for a baseball team is 3:2. If a team won 18 games, how many games did the team lose?

$\frac{\text{won}}{\text{lost}}$ $\frac{3}{2}=\frac{18}{x}$ $3x=36$

$x=$ 12 games lost

Vocabulary:

(D) Scale - A ratio b/t 2 sets of measurements.

Ex: 1 in / 15 ft

(E) Scale drawing - uses a scale to represent an object

Ex:

7. A designer is trying to make a replica of the Washington Monument. If the scale is 1 in : 12 ft and the monument is 225 feet tall, how tall will the replica be?

$\frac{\text{model}}{\text{actual}}$ $\frac{1\text{ in}}{12\text{ ft}}=\frac{x}{225\text{ ft}}$ $12x=225$

$x=$ 18.75 in

8. A contractor has a blueprint for a house drawn to the scale 1 in : 3 ft. If a wall on the blueprint is $\frac{6}{5}$ in long, how long is the actual wall?

$\frac{\text{model}}{\text{actual}}$ $\frac{1\text{ in}}{3\text{ ft}}=\frac{\frac{6}{5}\text{ in}}{x}$ $x=3\frac{3}{5}$ ft

$=3.6$ ft

≅ → "congruent" ~ → "similar"

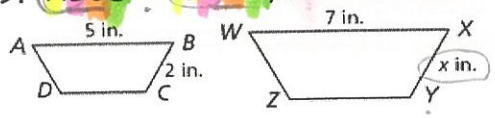
Vocabulary:

(F) Similar - 2 figures w/ same shape, not necessarily the same size

(G) Corresponding sides & angles - sides or angles in same locations (smallest → smallest)

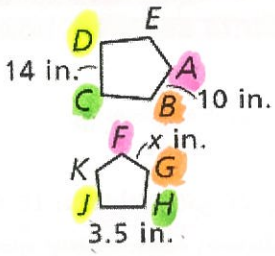
Examples:

9. ABCD ~ WXYZ, find x.



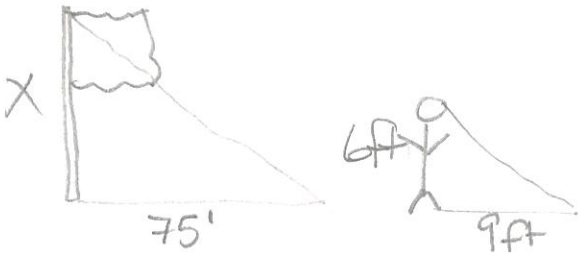
$\frac{5}{7} = \frac{2}{x}$ $5x = 14$ $x = \frac{14}{5}$ in → 2.8 in

10. ABCDE ~ FGHJK, find x.



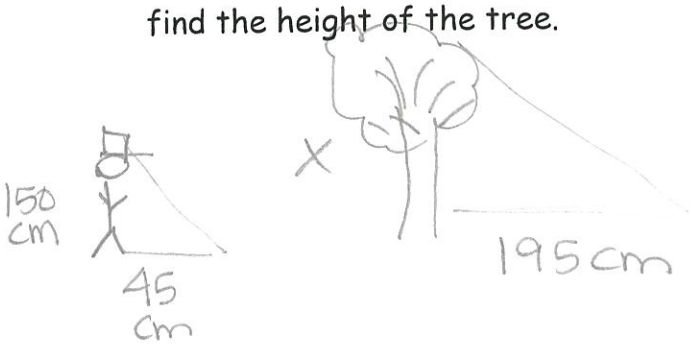
$\frac{x}{10} = \frac{3.5}{14}$ $\frac{14x}{14} = \frac{35}{14}$ $x = 2.5$ in

11. A flagpole casts a shadow that is 75 ft long at the same time a 6-foot-tall man casts a shadow that is 9 ft long. Write and solve a proportion to find the height of the flag pole.



$\frac{x}{75} = \frac{6}{9}$ $\frac{9x}{9} = \frac{450}{9}$ $x = 50$ ft

12. A forest ranger who is 150 cm tall casts a shadow 45 cm long. At the same time, a nearby tree casts a shadow 195 cm long. Write and solve a proportion to find the height of the tree.



$\frac{150}{45} = \frac{x}{195}$ $\frac{45x}{45} = \frac{29250}{45}$ $x = 650$ cm

ex 2

min = 4 max = 5

halfway between = 4.5

4 is .5 from 4.5

5 is .5 from 4.5

$|x - 4.5| = .5$

$x - 4.5 = .5$

$+4.5 \quad +4.5$

$x = 5$

max

$x - 4.5 = -.5$

$+4.5 \quad +4.5$

$x = 4$

min

ex 3

min = 16 lines

max = 32 lines

halfway is 24

16 is 8 from 24

32 is 8 from 24

$|x-24|=8$

$x-24=8$

$+24 \quad +24$

$x=32$

max

$x-24=-8$

$+24 \quad +24$

$x=16$

min

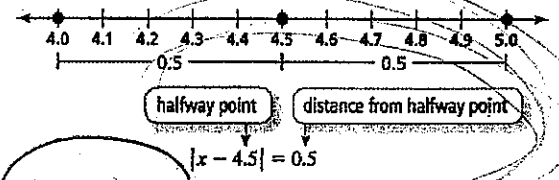
EXAMPLE 3 Writing an Absolute Value Equation

In a cheerleading competition, the minimum length of a routine is 4 minutes. The maximum length of a routine is 5 minutes. Write an absolute value equation that represents the minimum and maximum lengths.

SOLUTION

$X=4$
$X=5$

1. **Understand the Problem** You know the minimum and maximum lengths. You are asked to write an absolute value equation that represents these lengths.
2. **Make a Plan** Consider the minimum and maximum lengths as solutions to an absolute value equation. Use a number line to find the halfway point between the solutions. Then use the halfway point and the distance to each solution to write an absolute value equation.
3. **Solve the Problem**



▶ The equation is $|x - 4.5| = 0.5$.

4. **Look Back** To check that your equation is reasonable, substitute the minimum and maximum lengths into the equation and simplify.

Minimum
$|4 - 4.5| = 0.5$ ✓

Maximum
$|5 - 4.5| = 0.5$ ✓

$X - 4.5 = .5$
$+4.5 \quad +4.5$
$X = 5$

$X - 4.5 = -.5$
$+4.5 \quad +4.5$
$X = 4$

Chapter 1 Lesson #5

Obj: Be able to solve absolute value equations

Consider the absolute value equation $|x+2|=3$

$=|3| \rightarrow 3$

$=|-3| \rightarrow 3$

A. Describe two values that make the equation true.

$x=1$ or $x=-5$

B. Use your description to write two linear equations that represent the solutions to the absolute value equation.

$x+2=3$ $\quad$ $x+2=-3$

An **absolute value equation** is an equation that contains an absolute value expression. You can solve these equations by solving two related linear equations.

To solve $|ax+b|=c$ when $c \geq 0$, solve the related linear equations

$ax+b=c$ and $ax+b=-c$

When $c<0$, the absolute value equation $|ax+b|=c$ has no solution because absolute value always indicates a number that is not negative.

Ex 1) Solve each absolute value equation.

A. $|x-4|=6$

$x-4=6$ $\quad$ $x-4=-6$

$+4 \ +4$ $\quad$ $+4 \ +4$

$x=10$ $\quad$ $x=-2$

CK

$|10-4|=6$ $\quad$ $|-2-4|=6$

$|6|=6$ $\quad$ $|-6|=6$

$6=6$ $\quad$ $6=6$

B. $|3x+1|=-5$

NO solutions

C. $|3+x|=7$

$3+x=7$ $\quad$ $3+x=-7$

$-3 \ -3$ $\quad$ $-3 \ -3$

$x=4$ $\quad$ $x=-10$

D. $|4x+2|=6$

E. $|2x-5|+2=8$

$-2 \ -2$

$|2x-5|=6$

$2x-5=6$ $\quad$ $2x-5=-6$

$+5 \ +5$ $\quad$ $+5 \ +5$

$\frac{2x}{2}=\frac{11}{2}$ $\quad$ $2x=-1$

$x=11/2$ $\quad$ $x=-1/2$

F. $|3x+9|-10=-4$

Ex 2) In a cheerleading competition, the minimum length of a routine is 4 minutes. The maximum length of a routine is 5 minutes. Write an absolute value equation that represents the minimum and maximum lengths.

Ex 3) For a poetry contest, the minimum length of a poem is 16 lines. The maximum length is 32 lines. Write an absolute value equation that represents the minimum and maximum lengths.

$\frac{32-16}{2}=\frac{16}{2}$ — $32-8=24$

8

$16+8=24$ $\quad 16 \quad 24 \quad 32$

$|x-24|=8$

$x-24=8$ $\quad +24 \quad +24$ $\quad x=32$ ✓

$x-24=-8$ $\quad +24 \quad +24$ $\quad x=16$ ✓

Solving Equations with Two Absolute Values

To solve $|ax+b|=|cx+d|$, solve the related linear equations.

$ax+b=cx+d$ and $ax+b=-(cx+d)$

Ex 4) Solve each absolute value equation.

A. $|3x+4|=|x|$

$3x+4=x$ $\quad -3x \quad -3x$ $\quad 4=-2x$ $\quad -2=x$

$3x+4=-x$ $\quad -3x \quad -3x$ $\quad 4=-4x$ $\quad -1=x$

B. $|6x+8|=|10x|$

$6x+8=10x$

$6x+8=-10x$

$10x-10=-2$ $\quad +10 \quad +10$ $\quad \frac{10x}{10}=\frac{8}{10}$ $\quad x=4/5$

C. $|4x-10|=2|3x+1|$

$4x-10=2(3x+1)$ $\quad 4x-10=6x+2$ $\quad -4x \quad -4x$ $\quad -10=2x+2$ $\quad -2 \quad -2$ $\quad -12=2x$ $\quad -6=x$

$4x-10=2[-(3x+1)]$ $\quad 4x-10=2[-3x-1]$ $\quad 4x-10=-6x-2$ $\quad +6x \quad +6x$ $\quad 10x-10=-2$

An extraneous solution is an apparent solution that must be rejected because it does not satisfy the original equation.

Ex 5)

A. $|x+5|=|x+11|$

$x+5=x+11$ $\quad -x \quad -x$ $\quad 5 \neq 11$

NO solution

$x+5=-(x+11)$ $\quad x+5=-x-11$ $\quad +x \quad +x$ $\quad 2x+5=-11$ $\quad -5 \quad -5$ $\quad 2x=-16$ $\quad x=-8$

B. $|2+x|=|x-8|$

Chapter 1 Lesson #6 (2-8 & 2-9)

Obj: Solve problems involving percents.

Vocabulary: "part of the whole" } part / whole

Percent - ratio that compares a number to 100.

Ex: $5\% = \frac{5}{100}$

Examples:

1. Write 25% as a decimal & fraction.

   .25 } $\frac{25}{100} = \frac{1}{4}$

2. Write 0.48 as a percent & fraction.

3. Write 38% as a decimal and fraction.

   .38 $\frac{38}{100} = \frac{19}{50}$

4. Write 0.22 as a percent & fraction.

   $\frac{22}{100} = \frac{11}{50}$ 22%

5. Jerry, an electrician, worked 7 months out of the year. What percent of the year did he work?

   $\frac{\text{part}}{\text{whole}}$ $\frac{7}{12} = .58\overline{3} = 58.\overline{3}\%$

6. There are 28 students in a class. Sixteen (B) of those students are boys. What percent of the class are girls?

   $\frac{\text{part}}{\text{whole}} = \frac{28-16}{28} = \frac{12}{28} = 42.86\%$

7. A survey at a local school showed that 38% of students chose chocolate ice cream as their favorite ice cream. Eight hundred students took the survey. How many chose chocolate ice cream?

   38% of 800

   (.38)(800) = 304 chose chocolate

8. Mrs. Twigg has 31 students and 19 did their math homework. Mrs. TenBrock has 29 students and 22 did their homework. What is the percentage of students who did their homework?

$\frac{19+22}{29+31} = \frac{41}{60} = 68.\overline{3}\%$

↳ part / whole

9. There were 8,000 people who went to the Hudsonville/Rockford football game. Sixty-five percent were from Hudsonville. How many Rockford fans were there? $100 - 65 = 35\%$ Rockford $(.35)(8000) =$ 2800 from Rockford

10. There are 12 desks in one room and four are broken. There are 10 desks in another room and 3 are broken. What percent of the 22 desks are broken?

11. A science compound is 90 ounces. If the total amount of quartz in the compound is 13 ounces, what percent of the compound is quartz?

12. Of the 1950 students at HHS, 53% are male. How many students are female?

13. Out of the 20,500 people at the MSU basketball game, 15% are MSU students. How many are MSU students?

14. There are 45 boy basketball players at HHS. Twelve of them also play baseball. What percentage also play baseball?

Chapter 1 Lesson #7 (2-10)

Obj: Solve problems using discounts, commission, sales tax and tip.

Discount - price reduced. % off the original price

1. Admission to a museum is $8. Students receive a 15% discount.

   (a) How much is the discount? $(8)(.15) = \$1.20$

   (b) How much do students pay? $8 - 1.2 = \$6.80$

2. Cedar Point tickets are $54.95. For groups they are discounted 20%. What is the cost of going with a group rate? $(54.95)(.8) = \$43.96$

   DO NOT PAY ← $100\% - 20\% = 80\%$ I PAY

3. Chris used a coupon and paid $7.35 for a pizza that normally costs $10.50. What percent off was the coupon for? $\frac{10.50 - 7.35}{10.50} = \frac{3.15}{10.50} = .3 =$ 30% discount

4. Jeans originally cost $29.99 at Kohls. You paid $19.49 for them. What is your percent discount? $\frac{29.99 - 19.49}{29.99} = \frac{10.5}{29.99} = .3501 =$ 35% discount

5. The cost of art supplies for class was $49.50. Becky had a 20% off coupon. What was her final cost? $(49.5)(.8) = \$39.60$

Commission - money paid to a person or company for making a sale. (% of sales)

Ex: Salesman { Formula: (base salary) + (% of sales) = total salary
(% of sales: rate)(sales $)

6. Mr. Cortez earns a base salary of $26,000 plus a sales commission of 5%. His total sales for one year were $300,000. What is his total pay for the year?

   $26{,}000 + [(.05)(300{,}000)] =$

   $26{,}000 + 15{,}000 = \$41{,}000$

7. Betty works at DeNooyer Chevrolet. She earns 8% on each car she sells. Betty sold a car for $23,500. How much commission did she make?

   $(23{,}500)(.08) = \$1880$

8. Bill earns 16% commission on each boat he sells. If he earned $320, how much did the boat sell for? (Sale of Boat)(Rate) = commission

$\frac{.16x}{.16} = \frac{320}{.16}$ $x = \$2000$

9. A telemarketer earns $350 per week plus a 12% commission on sales. If her total pay is $462.80, what was her final sales for the week?

$350 + [.12(x)] = 462.80$

$350 + .12x = 462.8$

$-350 \quad -350$

$\frac{.12x}{.12} = \frac{112.8}{.12}$ $x = \$940$

10. Sam sells houses. He earns 3.5% on each house he sells. His commission for a house was $4549.97. What was the selling price of the house?

$\frac{.035x}{.035} = \frac{4549.97}{.035}$ $x = \$129,999.14$

11. Sally works for Amway. She makes $12,000 each year and 12.5% of her sales. Her sales for the year are $235,000. How much money did she make this year?

$12000 + .125(235,000) =$

$12000 + 29375 = \$41,375$

Tip - money added to the bill for service.

Sales Tax - percent of item's cost or bill.

12. What is the final price of a shirt that costs $29.50, including 6% sales tax?

$(29.50)(1.06) = \$31.27$

13. Mary's family went out to dinner at On the Border and the bill came to $67.95. They left $13.59 for a tip. What percent is that?

$\frac{13.59}{67.95} = .2 = 20\%$

14. Find the tax on shoes that cost $68.50 when the sales tax is 8%.

$(68.50)(.08) = \$5.48$

15. The Klaasen family went to Olive Garden. Their bill was $32.89. They decided to leave their waitress a 20% tip. How much did they pay for their meal including the tip?

$(32.89)(1.2) = \$39.47$

16. Including an 18% tip, the total bill at Vitale's was $43.07. What was the total before the tip?