Express each phrase as a rate and unit rate.
(Round your answer to the nearest hundredth.)

	Rate	Unit Rate
9) 6 calculators cost $180.00	$\frac{\$180}{6}$	$\frac{\$30}{1}$
10) 7 pencils for 16 dollars	$\frac{\$16}{7}$	$\frac{\$2.29}{1}$
11) 7 batteries cost 17 dollars	$\frac{\$17}{7}$	$\frac{\$2.43}{1}$
12) 11 inches of snow in 4 hours	$\frac{11}{4}$	$\frac{2.75}{1}$

Fraction Form OR Decimal Form

Instructions: Write the fraction form and decimal form of each percent.

Example   16%

Fraction Form $\frac{16}{100}$ 0.16 Decimal Form

$\boxed{\frac{7}{25}}$ 28% $\frac{28}{100}$ .28 $\boxed{\frac{41}{100}}$ 41% .41

$\boxed{\frac{27}{50}}$ 54% $\frac{54}{100}$ .54 $\boxed{\frac{1}{50}}$ 2% $\frac{2}{100}$ .02

$\boxed{\frac{1}{25}}$ 4% $\frac{4}{100}$ .04 $\boxed{\frac{19}{20}}$ 95% $\frac{95}{100}$ .95

$\boxed{\frac{4}{5}}$ 80% $\frac{80}{100}$ .8 $\boxed{\frac{41}{25}}$ 164% $\frac{164}{100}$ 1.64

$\boxed{\frac{73}{100}}$ 73% .73 $\boxed{\frac{233}{100}}$ 233% 2.33

Statistical

Questions

How many days are in March? **no**

How old is your dog? **no**

On average, how old are the dogs that live on this street? **no** (mean)

What proportion of the students at your school like watermelons? **no**

Do you like watermelons? **no**

How many bricks are in this wall? **no**

What was the temperature at noon today at City Hall? **no**

L1 – Solving Percent Problems using Proportions Worksheet

Name: _____
Date: _____ Section: _____

REMEMBER:

"OF" number is always behind the word of

"%" number is the number with the percent sign

"IS" number will be in front of the word is
or behind the word is

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

Write a proportion and then solve it for each problem. Be sure to show all the steps for solving a proportion. If necessary, round answers to the nearest tenth.

1. What number is 70% of 45? $\frac{is}{of}$ $\frac{\%}{100}$
$\frac{x}{45} = \frac{70}{100}$ $100x = 3150 =$ 1. **31.5**

2. 23% of 75 is what number?
$\frac{x}{75} = \frac{23}{100}$ $100x = 1725 =$ 2. **17.25**

3. 45 is what percent of 90?
$\frac{45}{90} = \frac{x\%}{100}$ $90x = 4500 =$ 3. **50**

4. What percent of 77 is 7?
$\frac{7}{77} = \frac{x}{100}$ $77x = 700 =$ 4. $\frac{9.09}{9.1}$

5. 15 is 25% of what number?
$\frac{15}{x} = \frac{25}{100}$ $25x = 1500$ 5. **60**

6. 18% of what number is 43?
$\frac{43}{x} = \frac{18}{100}$ $\frac{18x}{18} = \frac{4300}{18}$ **238.89**

Translate Algebraic Expressions

1) 6 is added to one-third of n

$$6 + \frac{n}{3}$$
$$6 + \frac{1}{3}n$$

2) 6 less than 2 times z

$$2z - 6$$

3) Take away 2 from 7 times b

$$7b - 2$$

4) 4 times the sum of 7 and b

$$4(7+b)$$

5) One-third of k is subtracted from 4

$$4 - \frac{1}{3}k$$

6) Add 5 to 9 times q

$$9q + 5$$

7) Subtract 2 from 8 times n

$$8n - 2$$

8) 9 times the sum of d and 8

$$9(d+8)$$

9) Subtract five-sixths from 6 times c

$$6c - \frac{5}{6}$$

10) One-half of the sum of 4 and g

$$\frac{4+g}{2} \text{ or}$$
$$\frac{1}{2}(4+g)$$

7. Write the following numbers as a percent, fraction, and decimal.

Fraction	Decimal	Percent
$\frac{2}{10}$	.2	20%
$\frac{35}{100} = \frac{7}{20}$	0.35	35%
$\frac{17}{100}$	.17	17%
$\frac{8}{25}$	.32	32%

Mean, Median, Mode, Range

35, 56, 34, 44, 52, 12, 34, 45

Mean = 39   Median = 39.5

Mode = 34   Range = 44

$$\frac{12, 34, 34, 35, 44, 52, 56}{8}$$
$$45$$

$$56-12 = \qquad \frac{35+44}{2}$$

24, 34, 32, 16, 45, 38, 28

Mean = 31   Median = 32

Mode = none   Range = 29

$$\frac{16, 24, 28, (32), 34, 38, 45}{7}$$

$$45-16 = 29$$

86, 24, 65, 65, 24, 24

Mean = 48   Median = 44.5

Mode = 24   Range = 62

$$\frac{24, 24, 24, 65, 65, 86}{6}$$

$$\begin{array}{r} 86 \\ -24 \\ \hline 62 \end{array} \qquad \frac{24+65}{2}$$

32, 23, 22, 33, 33, 23, 32, 23, 22

Mean = 27   Median = 23

Mode = 23   Range = 11

$$\frac{22, 22, 23, 23, 23, 32, 32, 33, 33}{9}$$

$$\begin{array}{r} 33 \\ -22 \end{array}$$

Solve each problem using the percent proportion method.

18. 9 is 15% of what number? $\dfrac{9}{X} \nearrow \dfrac{15}{100}$ $\dfrac{15X}{15} = \dfrac{900}{15} = \quad X=60$	**19.** 24 is what percent of 120? $\dfrac{24}{120} \nearrow \dfrac{X}{100}$ $\dfrac{120X}{120} = \dfrac{2400}{120} = X=20$
20. What number is 15% of 80? $\dfrac{X}{80} \nearrow \dfrac{15}{100}$ $100X = 1200 \quad X=12$	**21.** 60 is 75% of what number? $\dfrac{60}{X} \nearrow \dfrac{75}{100}$ $\quad 75X=6000$ $X=80$
22. 12% of what number is 3? $\dfrac{3}{X} \nearrow \dfrac{12}{100}$ $\dfrac{12X}{12} = \dfrac{300}{12} = X=25$	**23.** 3 is what percent of 60? $\dfrac{3}{60} \nearrow \dfrac{X}{100}$ $\dfrac{60X}{60} = \dfrac{300}{60} = X=5$
24. What percent of 48 is 12? $\dfrac{12}{48} \nearrow \dfrac{X}{100}$ $\dfrac{48X}{48} = \dfrac{1200}{48} = X=25$	**25.** 198 is 33% of what number? $\dfrac{198}{X} \nearrow \dfrac{33}{100}$ $\dfrac{33X}{33} = \dfrac{19800}{33} = X=600$

Finding Statistical Questions

Name:

Determine if the question posed is a statistical question (yes) or not (no).

<u>Answers</u>

1) How tall are the trees in the park?

1. yes

2) How many hours did you sleep last night?

2. no

3) How many brothers does each classmate have?

3. yes

4) Which football game had the most touchdowns this season?

4. no

5) How many cars are in each driveway on your street?

5. yes

6) How many siblings do you have?

6. no

7) How many students passed the math test?

7. no

8) How many classmates have a game app on their phone?

8. no

9) How many people in the office are wearing ties?

9. no

10) How much money did the different classes earn?

10. yes