Name: _____

Lesson 2.1 - Intro to Rates

Definitions:

Ratio = _____

A Ratio can be written like _____ or _____

A Ratio is often reduced to _____

A Ratio is NOT a _____

Fraction = _____

Percentage = _____

Example: A classroom has 10 boys and 20 girls

a) Write a ratio to compare the boys to girls

b) Reduce the ratio to lowest terms

c) Write this ratio in fraction form, decimal form, and percentage form

NOTE: What fraction of the classroom is boys? DIFFERENT QUESTION!

Comparisons can be expressed as a ratio, fraction, decimal, or percentage.

Ratio	Fraction Form	Decimal Form	Percentage Form
3:4			
		2.67	

Assignment:

Ratio	Fraction Form	Decimal Form	Percentage Form
4:5			
		1.2	
	$^{5}/_{8}$		
7:4			
			375%
			85%
11:15			
		0.3333…	
	$^{11}/_{9}$		

Word Problem: A classroom has 16 boys and 12 girls

a) Write a ratio to compare the boys to girls

b) Reduce the ratio to lowest terms

c) Write this ratio in fraction form, decimal form, and percentage form

NOTE: What fraction of the classroom is boys? **DIFFERENT QUESTION!**

2) Reducing Ratios

To reduce a ratio to lowest terms, you can use the calculator…

Assignment:

a) 2.4 to 10 _____

b) $\frac{1}{4}$ to 3 _____

c) $3\frac{1}{2} : 8\frac{3}{4}$ _____

d) $1\frac{3}{4} : 6\frac{2}{3}$ _____

e) $0.04 : 0.0028$ _____

f) $\frac{3}{5} : \frac{2}{9}$ _____

g) 5.3 to 3.975 _____

h) 2.6 to 3.64 _____

i) $\frac{4}{7} : \frac{2}{5}$ _____

j) $2\frac{1}{3} : 5\frac{1}{2}$ _____

3) Proportions

Are the ratios proportional? Yes or No

1. 14:14, 2:1	2. 5 to 4, 28 to 35	3. $\frac{45}{30} = \frac{61}{46}$
4. 3:7, 18:42	5. $\frac{5}{24} = \frac{10}{12}$	6. 20 to 23, 8 to 11

Find the missing number

When *x* is on top: When *x* is on the bottom:

Assignment: Find the missing number

1. $\frac{n}{7} = \frac{36}{28}$	2. $\frac{7}{4} = \frac{14}{n}$	3. $\frac{6}{1} = \frac{30}{n}$
5. $\frac{n}{6} = \frac{8}{3}$	6. $\frac{9}{6} = \frac{n}{2}$	7. $\frac{45}{5} = \frac{9}{n}$
9. $\frac{2}{5} = \frac{n}{15}$	10. $\frac{3}{1} = \frac{39}{n}$	11. $\frac{n}{24} = \frac{2}{3}$
13. $\frac{n}{36} = \frac{8}{9}$	14. $\frac{9}{11} = \frac{18}{n}$	15. $\frac{7}{12} = \frac{n}{48}$
17. $\frac{1}{2} = \frac{n}{44}$	18. $\frac{4}{n} = \frac{48}{36}$	19. $\frac{6}{18} = \frac{n}{3}$
21. $\frac{n}{33} = \frac{32}{24}$	22. $\frac{26}{13} = \frac{48}{n}$	23. $\frac{26}{13} = \frac{16}{n}$

Assignment: Find the missing number

1. $\frac{6}{16} = \frac{3}{n}$	2. n to 40 = 9 to 10	3. 4:7 = n:49
4. 4:n = 48:36	5. 4 to 7 = n to 21	6. 28 to n = 7 to 11
7. $\frac{1}{n} = \frac{5}{50}$	8. 6:2 = 3:n	9. 44:8 = 33:n
10. 44 to n = 11 to 6	11. n:4 = 49:28	12. 6:7 = 18:n
13. 4 to 5 = n to 10	14. 11:n = 44:12	15. n to 5 = 36 to 15

Assignment: Fill in the blank

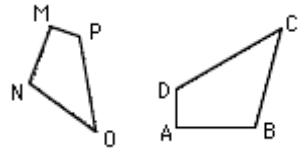
1. 417 pages in 3 days = _____ pages in 9 days	2. 208 miles in 4 hours = _____ miles in 2 hours
3. 64 meters in 1 second = _____ meters in 2 seconds	4. 12 calls in 3 hours = _____ calls in 1 hour
5. 160 meters in 4 seconds = _____ meters in 20 seconds	6. 168 pages in 2 days = _____ pages in 6 days

7. 64 calls in 16 hours = _____ calls in 4 hours	8. 524 miles in 2 hours = _____ miles in 10 hours
9. 14 seats in 1 row = _____ seats in 4 rows	10. 774 meters in 9 seconds = _____ meters in 3 seconds

Find the unit rate: Definition of unit rate is _____

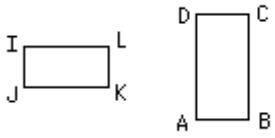
1. 4 calls in 1 hour	2. 759 miles in 3 hours
3. 312 pages in 4 days	4. 54 seats in 6 rows
5. 219 meters in 3 seconds	6. 144 seats in 6 rows
7. 544 pages in 4 days	8. 106 meters in 2 seconds
9. 10 calls in 5 hours	10. 7,472 miles in 16 hours

Find the missing side length

1. 

length of sides:

PM = 112 yd
OP = 80 yd
NO = 96 yd
MN = 72 yd
BA = 90 yd
DC = 100 yd
AD = 120 yd
CB = _____

2. 

length of sides:

IJ = 42 cm
KL = 42 cm
LI = _____
JK = 12 cm
DA = 26 cm
CD = 91 cm
AB = 91 cm
BC = 26 cm

Solve the proportions

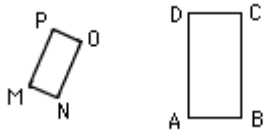
1. $\frac{w}{18} = \frac{2}{9}$	2. $\frac{162}{61.2} = \frac{270}{s}$
4. $\frac{30}{9} = \frac{10}{h}$	5. $\frac{70.7}{140} = \frac{x}{260}$
7. $\frac{28}{c} = \frac{44}{858}$	8. $\frac{4}{8} = \frac{3}{v}$
10. $\frac{23}{n} = \frac{92}{32}$	11. $\frac{30}{69} = \frac{d}{207}$

Find the unit rate:

1. a 2.6-kg bag of carrots for $7.05 _____ per kg	2. 322.7 miles in 7 hours _____ miles per hour
3. 12 for $38.88 _____ each	4. type 1103.6 words in 17 minutes and 31 seconds _____ words per minute
5. $17.40 for 12 hours _____ per hour	6. 768 calories for 3 servings of pie _____ calories per serving
7. 70 chairs in 5 rows _____ in each row	8. 91 chairs in 7 rows _____ in each row
9. 140 students in 4 buses _____ in each bus	10. 13 for $37.31 _____ each

Find the missing side lengths:

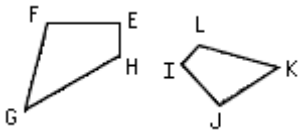
5.



length of sides:

MN =	24 yd	AB =	72 yd
PM =	9 yd	DA =	27 yd
NO =	9 yd	CD =	72 yd
OP =	24 yd	BC =	_____

6.



length of sides:

FE =	63 ft	JI =	49 ft
EH =	54 ft	LK =	_____
GF =	81 ft	KJ =	63 ft
HG =	117 ft	IL =	42 ft

Practice Quiz:

1) Complete the chart

Ratio	Fraction	Decimal	Percentage
6:10			
			125%

2) Reduce each of the following ratios to lowest terms:

a) 12 : 36 = _____ b) $\frac{2}{3} : \frac{3}{4}$ = _____

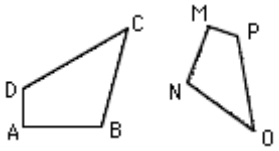
3) Solve the following ratios:

a) $\frac{6}{16} = \frac{n}{64}$ b) $\frac{11}{23} = \frac{8}{n}$

4) Solve the following ratios to find the unit rate:

a) $\frac{300\ km}{2.0\ h} : \frac{x}{1.0\ h}$ b) $\frac{300\ cal}{500\,mL} : \frac{x}{1.0\,L}$

5) Find the missing side lengths



length of sides:

CB = 132 cm OP = _____

DC = 168 cm MN = 32 cm

BA = 96 cm PM = _____

AD = 120 cm NO = 40 cm