Unit 7: Ratios and Proportions — Name: Key

Pre-Algebra: Practice Test — Hour: _____

7.1: I can calculate the unit rate. 1 pt ea.

1. $\frac{18 \text{ chairs}}{3 \text{ people}}$ → 6 chairs / 1 person

2. $\frac{70 \text{ miles}}{5 \text{ hours}}$ → 14 miles / 1 hour

3. $\frac{\$161}{7 \text{ shares}}$ → $23 / 1 share

4. $\frac{320 \text{ tourists}}{5 \text{ boats}}$ → 64 tourists / 1 boat

7.1: I can simplify complex fractions. 2 pts ea.

5. $\frac{\frac{1}{2}}{\frac{5}{8}}$ → $\frac{1}{2} * \frac{8^4}{5} = \frac{4}{5}$

6. $\frac{1\frac{3}{5}}{\frac{1}{15}}$ → $\frac{8}{5} * \frac{15^3}{1} = 24$

7. $\frac{\frac{5}{9}}{\frac{25}{27}}$ → $\frac{5}{9} * \frac{27^3}{25_5} = \frac{3}{5}$

8. $\frac{2\frac{1}{4}}{1\frac{3}{8}}$ → $\frac{9}{4} * \frac{8^2}{11} = \frac{18}{11} = 1\frac{7}{11}$

Score: 12 pts. %

7.2 I can find equivalent rates by conversion. 3 pts ea.

1. $\frac{300\ miles}{20\ seconds} = \frac{?miles}{1\ minute}$

$\frac{300\ miles}{20\ sec} * \frac{Time}{\frac{60\ sec}{1\ min}} = \frac{900\ miles}{1\ minute}$

2. $\frac{45\ minutes}{1\ mile} = \frac{?hours}{1\ miles}$

$\frac{45\ minutes}{1\ mile} * \frac{Time}{\frac{1\ hour}{60\ min}} = \frac{3\ hours}{4\ miles} = \frac{3/4\ hour}{1\ mile}$

3. $\frac{440\ cups}{1\ mile} = \frac{?ounces}{1\ yard}$

$\frac{440\ cups}{1\ mile} * \frac{Volume}{\frac{8\ oz}{1\ cup}} * \frac{Distance}{\frac{1\ mile}{1760\ yds}} = \frac{2\ ounces}{1\ yard}$

4. $\frac{8\ calls}{1\ hour} = \frac{?calls}{1\ day}$

$\frac{8\ calls}{1\ hour} * \frac{Time}{\frac{24\ hours}{1\ day}} = \frac{192\ calls}{1\ day}$

Score: 12 pts. ____%

7.3 I can state whether the ratios for a proportion. 1 pt ea.

1. $\frac{9}{6}, \frac{156}{104}$

936 936

Yes

2. $\frac{36}{48}, \frac{30}{30}$

1440 1080

NO

3. $\frac{4}{20}, \frac{16}{40}$

320 160

NO

4. $\frac{16}{48}, \frac{18}{52}$

864 832

NO

7.3 I can solve proportions using cross products. 2 pts ea

5. $\frac{x}{14} = \frac{10}{4}$

$4x = 140$

$x = 35$

6. $\frac{(-4x+6)}{4} = \frac{5}{2}$

$(5)(4) = 2(-4x+6)$

$20 = -8x + 12$

$8 = -8x$

$-1 = x$

7. $\frac{12}{x} = \frac{0.4}{9}$

$.4x = 108$

$x = 270$

8. $\frac{28}{x} = \frac{8}{16}$

$8x = 448$

$x = 56$

Score: 12 pts %

7.4 I can use a table to find the constant of proportionality. 1pt ea.

1. Each pound of green beans costs: $.33

Pounds of Beans (x)	3	5	7	9	11
Cost (y)	$0.99	$1.65	$2.31	$2.97	$3.63

Equation: $y = .33x$

2. Each unicorn costs: $225

Unicorns (x)	2	4	6	8	10
Cost (y)	$450	$900	$1,350	$1,800	$2,250

Equation: $y = 225x$

3. Each candle costs: $2

Candles (x)	1	4	8	12	16
Cost (y)	$2	$8	$16	$24	$32

Equation: $y = 2x$

4. For every M&M in the bag, there are 4 green M&Ms:

# of Green M&Ms (x)	12	18	24	30	36
Total # of M&Ms (y)	48	72	96	120	144

Equation: $y = 4x$

7.4 I can use a table to determine if a relationship varies directly.

State whether the table represents a proportional relationship.

5. *3

$x(years)$	$y(coins)$
0	0
1	3
2	6
3	9
4	12

yes

6.

$x(time)$	$y(miles)$
0	0
4	400
20	1,600
40	12,000
80	32,000

NO

Score: 10 pts %

7.5 I can find the constant of proportionality and use it to write an equation. 2pts ea

1. $y = 25; x = 5$

$y = kx$
$25 = k(5)$
$5 = k$

$y = 5x$

2. $y = 36; x = 4$

$y = kx$
$36 = k(4)$
$9 = k$

$y = 9x$

3. $y = 30; x = 3$

$y = kx$
$30 = k(3)$
$10 = k$

$y = 10x$

4. $y = 4; x = \frac{1}{4}$

$y = kx$
$4 = k(\frac{1}{4})$
$16 = k$

$y = 16x$

7.5 I can tell whether x and y are related directly. 1pt ea.

5. $y = \frac{1}{2}x$

Yes

6. $\frac{1}{3}y = x(3)$
(3)

$y = 3x$ Yes

7. $y = \frac{y}{2}(2)$
(2)

$y = 2x$ yes

8. $y = x + 1$

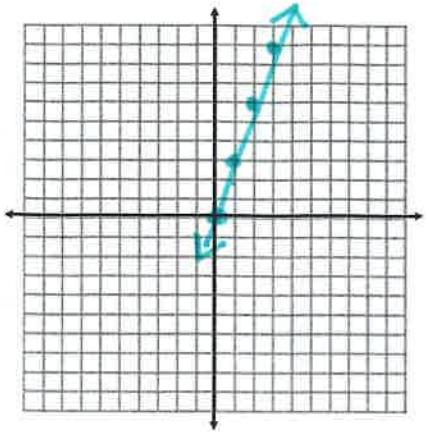
NO

Score: 12 pts. %

7.6 I can graph solutions to direct variation equations 3 pts ea.

1. $y = 1; x = \frac{1}{3}$

x	y
0	0
1	3
2	6
3	9
4	12

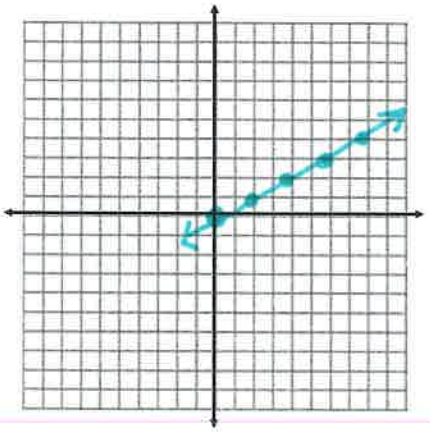


$y = kx$
$1 = k(\frac{1}{3})$
$3 = k$

$y = 3x$

2. $y = 2; x = 4$

x	y
0	0
2	1
4	2
6	3
8	4

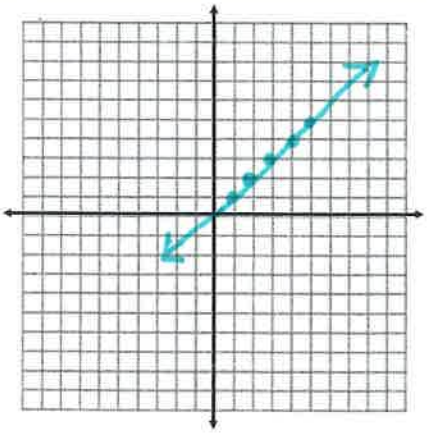


$y = kx$
$2 = k(4)$
$\frac{1}{2} = k$

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

3. $y = 1; x = 1$

x	y
0	0
1	1
2	2
3	3
4	4



$y = kx$
$1 = k(1)$
$1 = k$

$y = x$

9 pts.

4 pts ea

7.7 I can write and solve a proportion and use direct variation to represent real-life problems.

1. 8 rolls of paper towel cost $14.08. How many rolls can you buy for $21.12

Proportion: $\frac{\$14.08}{8 \text{ rolls}} = \frac{\$21.12}{x \text{ rolls}}$

Answer: 12 rolls

Constant of Proportionality (k): $K = 1.76$

$y = kx$
$14.08 = k(8)$

Direct Variation Equation: $y = 1.76x$

2. Joseph drives 125 miles in 25 hours. At the same rate, how far will he be able to drive in 6 hours?

Proportion: $\frac{125 \text{ miles}}{25 \text{ hrs.}} = \frac{x \text{ miles}}{6 \text{ hrs.}}$

Answer: 30 Miles

Constant of Proportionality (k): $K = 5$

$y = kx$
$125 = k \cdot 5$

Direct Variation Equation: $y = 5x$

3. One hundred people attend a school fundraiser. The school earns $2500 from ticket sales. How much money will be raised from ticket sales if 500 people attend next year?

Proportion: $\frac{\$2500}{100 \text{ people}} = \frac{\$x}{500 \text{ people}}$

Answer: $12,500

Constant of Proportionality (k): $K = 25$

$y = kx$
$2500 = k(100)$

Direct Variation Equation: $y = 25x$

4. If recycling 2006 pounds of paper saves 17 trees, how many trees are saved when 5000 pounds of paper are recycled?

Proportion: $\frac{2006 \text{ lbs.}}{17 \text{ trees}} = \frac{5000 \text{ lbs.}}{x \text{ trees}}$

Answer: ≈ 42 trees

Constant of Proportionality (k): $K = 118$

$y = kx$
$2006 = k(17)$

Direct Variation Equation: $y = 118x$

Score: 16 pts %