

WS Review UNIT 2 – Proportional Reasoning

PA State Standards

M8.A.2.1.1 Simplify numeric expressions involving integers, using the order of operations. (May include all types of grouping symbols. No combining negatives with exponents [4^{-3}] or compound exponents.)

M8.A.2.2 Solve problems using rates, ratios, proportions and/or percents

M8.A.2.2.1 Solve problems involving percents (e.g. tax, discounts, etc)

M8.A.2.2.2 Represent of solve rate problems (e.g. unit rates, simple interest, distance, etc.)

M8.A.3.2.1 Estimate answers to problems involving percents (percents will be limited to 1%, 10%, 15%, 20%, 25%, 50%, or 75%)

M8.B.1.1.1 Convert among metric measurements (milli, centi, kilo, using meter, liter, or gram)

M8.B.1.1.2 Convert customary measurements up to 2 units above or below the given unit (e.g. inches to yards, pints to gallons)

M8.B.1.1.4 Convert from Fahrenheit to Celsius or Celsius to Fahrenheit (formulas provided)

You may use a calculator for this test but you must show your steps.

<p>1. <u>M8.A.2.2.2</u> (2 points each) Find the value of the unknown number in each proportion.</p> <p>a. $\frac{16}{60} = \frac{p}{80}$ b. $\frac{20}{12} = \frac{36}{x}$</p> <p style="margin-left: 40px;"><i>Handwritten:</i> $20x = 12(36)$ $20x = 432$ $x = 21.6$</p> <p style="margin-left: 40px;"><i>Handwritten:</i> $60p = 16(80)$ $60p = 1280$ $60p = \frac{1280}{60}$ $60p = 21.\bar{3}$</p>	<p>1a. <u>21.$\bar{3}$ or $21\frac{1}{3}$ or $64/3$</u></p> <p>1b. <u>21.6 or $108/5$</u></p>
<p>2. <u>M8.A.2.2.2</u> (4 points) Ms. Salazar's rice mixture consists of three parts of white rice to four parts of wild rice. If she makes a mixture that uses 9 cups of white rice, how many cups of wild rice will she use? Set up a proportion and solve.</p>	<p>2.</p> <p>proportion: $\frac{3}{4} = \frac{9}{x} = \frac{\text{white}}{\text{wild}}$</p> <p>$3x = 36$</p> <p>$x = 12$</p> <p>cups of wild rice: <u>12</u></p>
<p>3. <u>M8.A.2.2.1</u> (4 points each) Write each question as a proportion and then find the unknown number.</p> <p>a. 32% of what number is 63.8?</p> <p style="margin-left: 40px;"><i>Handwritten:</i> $\frac{\text{is}}{\text{of}} = \frac{\%}{100}$</p> <p>b. 200 is what percent of 80?</p>	<p>3.</p> <p>a. proportion: $\frac{63.8}{x} = \frac{32}{100}$</p> <p>unknown <u>1993.75</u></p> <p>$32x = 63.8(100)$ $32x = 6380$ $x = 1993.75$</p> <p>b. proportion: $\frac{200}{80} = \frac{x}{100}$</p> <p>unknown <u>250</u></p> <p>$80x = 20000$ $x = 250$</p>

<p>4. <u>M8.A.2.2.2</u> (4 points) A team of biologists tagged 42 seals off the coast of an island. Later they captured a sample of 75 where 25 were tagged. Use this information to set up a proportion and estimate the number of seals in the area.</p>	<p>4. proportion: $\frac{42}{x} = \frac{25}{75}$ tagged total seals in the area: <u>126</u> $25x = 42(75)$ $25x = 3150$ $x = 126$</p>
<p>5. <u>M8.B.1.1.2</u> (4 points) How many feet are in 18 miles? (1 mile = 5280 feet) Set up a proportion and solve.</p>	<p>5. proportion: $\frac{1}{5280} = \frac{18}{x}$ miles ft answer: <u>$x = 95040$ ft</u> $x = 18(5280)$</p>
<p>6. <u>M8.B.1.1.2</u> (4 points) How many yards are equal to 108 inches? (1 yard = 36 inches) Set up a proportion and solve.</p>	<p>6. proportion: $\frac{1}{36} = \frac{x}{108}$ yards inches answer: <u>3 yards</u> $36x = 108$ $x = 3$</p>
<p>7. <u>M8.B.1.1.1</u> (4 points) Greg is 160 centimeters tall. What is Greg's height in meters? Set up a proportion and solve.</p>	<p>7. proportion: $\frac{100}{1} = \frac{160}{x}$ cm m answer: <u>1.6 m</u> $100x = 160$ $x = 1.6$</p>
<p>8. <u>M8.A.2.2.2</u> (4 points) A runner ran 2000 meters in 6 minutes. What is his average speed in meters per minute? Set up a proportion and solve.</p>	<p>8. proportion: $\frac{2000}{6} = \frac{x}{1}$ meters min average speed: <u>$333\frac{1}{3}$ m/min</u> $6x = 2000$ $x = 333\frac{1}{3}$</p>

<p>9. <u>M8.A.2.2.2</u> (4 points each) At Sascha's Salad Bar, customers make their own salads and pay by the ounce. Jin Lee paid \$4.00 for an 16-ounce salad. Set up a proportion, then solve.</p> <p>a. How much would a 20-ounce salad cost?</p> <p>b. Seth spent \$5.50 on a salad. How much did his salad weigh?</p>	<p>9a. proportion: $\frac{4}{16} = \frac{x}{20}$ $\frac{\\$}{\text{ounce}}$ cost: $\\$5$ $16x = 80$ $x = 5$</p> <p>9b. proportion: $\frac{4}{16} = \frac{5.50}{x}$ $\frac{\\$}{\text{ounce}}$ weight: <u>22 ounces</u> $4x = 16(5.50)$ $4x = 88$</p>
<p>10. <u>M8.A.3.2.1</u> (4 points) Teachers attend school 191 days out of 365 days of the year. Approximate what percent of the year students attend school. Set up a proportion and solve.</p>	<p>10. proportion: $\frac{191}{365} = \frac{x}{100}$ $\frac{\text{part}}{\text{whole}}$ $x = 22$ <u>52.3%</u> $365x = 191(100)$ $365x = 19100$ $x = 52.3$</p>
<p>11. <u>M8.A.2.2.1</u> (4 points) A car is purchased for \$6295. An additional 12% is needed to cover the cost of taxes and fees. Find the <u>total</u> amount of money paid. Set up a proportion and solve.</p>	<p>11. proportion: $\frac{x}{6295} = \frac{112}{100}$ total = $\\$7650.40$ $100x = 112(6295)$ $100x = 705040$ $\\$7050.40$</p>
<p>12. <u>M8.B.1.1.4</u> (2 points) If the temperature in Fahrenheit is 64°, what is the equivalent temperature in Celsius?</p> $C = \frac{5(F - 32)}{9}$ $C = \frac{5(64 - 32)}{9}$ $C = \frac{5(32)}{9}$ $C = \frac{160}{9} = 17.8^\circ$	<p>12. temperature = <u>17.8°C</u></p>

13. M8.A.2.1.1 (2 points each)
Evaluate each expression.

a. $5 - 4 \times 2 + 8 \div 2$

$$5 - 8 + 4$$

$$-3 + 4$$

$$\textcircled{1}$$

c. $-8 + 2 \times 5 - 4 \div 2$

$$-8 + 10 - 2$$

$$2 - 2$$

$$0$$

e. $-3 - 6 \times 4 + 8 \div 4$

$$-3 - 24 + 2$$

$$-27 + 2$$

$$-25$$

b. $5 - 4 \times (2 + 8) \div 2$

$$5 - 4 \cdot (10) \div 2$$

$$5 - 40 \div 2$$

$$5 - 20 = -15$$

d. $-8 + 2 \times (5 - 4) \div 2$

$$-8 + 2 \cdot 1 \div 2$$

$$-8 + 2 \div 2$$

$$-8 + 1 = -7$$

f. $-3 - 6 \times (4 + 8) \div 4$

$$-3 - 6 \cdot 12 \div 4$$

$$-3 - 72 \div 4$$

$$-3 - 18 = -21$$

13.

a. 1

b. -15

c. 0

d. -7

e. -25

f. -21