NAME _____ DATE _____ PERIOD _____

M7A Chapter 5 Practice Test

For Exercises 1 and 2, refer to the table below.
The table shows the heart rates and masses of different animals.

Animal	Heart Rate (beats/min)	Mass (g)
cat	150	2000
cow	66	800,000
hamster	450	60
horse	44	1,200,000

2.7916
72 | 201.
144
570
504
660
648
120
72
480
432

1. Express the ratio of a cow's heart rate to a hamster's heart rate as a fraction in simplest form.

$\frac{66}{450}$ $\frac{66}{450} \div \frac{3}{3} = \frac{22}{150} \div \frac{2}{2} = \frac{11}{75}$ ★

2. Express the ratio of the mass of a cat to the mass of a cow as a fraction in simplest form.

$\frac{2,000}{800,000}$ $\frac{2000}{800000}$ $\frac{2}{80} = \frac{1}{40}$ → $\frac{1}{400}$ ★

3. A 4-gallon jug of milk costs \$5.60. At what price should a $\frac{1}{2}$-gallon jug be sold in order for the unit rate for both containers to be the same?

$\frac{5.60}{4} \div \frac{4}{4} = \frac{1.40}{1}$ ← UNIT RATE $\frac{1.40}{1} = \frac{0.70}{\frac{1}{2}}$ ★ \$0.70 FOR ½ GAL JUG OF MILK

4. Auggie began working on a computer program. After $7\frac{1}{5}$ hours, he had completed $20\frac{1}{10}$ lines of code. What was his unit rate of programming in lines of code per hour?

$\frac{20\frac{1}{10}}{7\frac{1}{5}} = \frac{20.1}{7.2} = \frac{2.7916}{1}$ ≈ ★ 2.79 LINES OF CODE PER HOUR

5. Joel works as an auditor and earns \$36,920 per year. What is Joel's weekly earnings? (52 weeks per year)

$\frac{36920}{52} \div \frac{52}{52} =$ \$710 PER WEEK ★

6. Is the following statement true or false? Explain your reasoning.

TRUE ★ → $\frac{\frac{3}{4}}{\frac{2}{16}} = \frac{36}{6}$ $\frac{3}{4} \div \frac{2}{16} = \frac{3}{4} \cdot \frac{16^4}{2} = \frac{12}{2} = 6 \longleftrightarrow \frac{36}{6} = 6$

7. Write and solve a proportion to solve for x.

3 ounces of perfume for \$105
7 ounces of perfume for x

$\frac{105}{3} = \frac{x}{7}$ $105(7) = 3(x)$ $\frac{735}{3} = \frac{3x}{3}$ 245 ~~265~~ $= x$

\$245 ~~\$265~~ FOR 7 oz. ★

8. Ryan is building a model of the Texas Capitol Building. He is using a scale of 2 inches = 5 meters. What is the height of the model if the Texas Capitol Building is 95 meters high?

MODEL / ACTUAL $\frac{2}{5} = \frac{38}{95}$ (×19) ★ THE MODEL IS 38 INCHES TALL

For Exercises 9 and 10, determine whether the set of numbers in each table is proportional. If the relationship is proportional, determine the constant of proportionality.

9. YES, PROPORTIONAL

Birds	1	2	3	4
Beaks	1	2	3	4

CONSTANT OF PROPORTIONALITY IS 1

10. NO, NOT PROPORTIONAL $\frac{32}{4} \neq \frac{60}{6}$

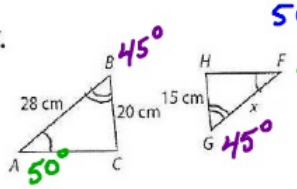
Number of Pizzas	2	4	6	8
Number of Slices	16	32	60	64

For Exercises 11 and 12, $\triangle ABC \sim \triangle FGH$.

11. Find the value of x.

$\frac{15}{20} = \frac{x}{28}$ $\quad \frac{15}{20} = \frac{3}{4}$

$\frac{3}{4} = \frac{x}{28}$ $\quad x = 21$



12. If $m\angle A = 50°$ and $m\angle B = 45°$, what is $m\angle H$?

$50 + 45 + \angle H = 180$

$50 + 45 + H = 180$

$95 + H = 180$

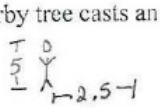
$-95 \quad -95$

$H = 85°$

$m\angle H = 85°$

$\angle X + \angle Y + \angle Z = 180°$

13. At the same time a 5-foot person casts a 2.5-foot shadow, a nearby tree casts an 8-foot shadow. How tall is the tree?



$\frac{5}{2.5} = \frac{x}{8}$

$x = 16$ ft

14. On a set of blueprints for a house, the scale is $\frac{1}{2}$ inch = 4 feet.

a. Find the actual length of a room that measures 3.2 inches on the blueprint.

b. Suppose an architect is updating the blueprints and decides to use a different scale. An actual length of 30 feet is drawn on the new blueprint as 4 inches. Complete the ratio for the new scale.

$\frac{1}{2}$ inch = ☐ feet

14a) $\frac{\frac{1}{2}}{4} = \frac{3.2}{x}$

$96\left(\frac{0.5}{48} = \frac{3.2}{x}\right)$

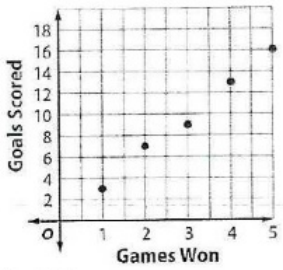
$x = 307.2$ in

25.6 ft

14b) $\frac{4 \text{ in}}{30 \text{ ft}} \div \frac{8}{8} = \frac{0.5 \text{ in}}{3.75 \text{ ft}}$

$\frac{1}{2}$ IN = 3.75 ft

15. Explain a method for determining if the relationship shown in the graph is proportional.



TO BE PROPORTIONAL THE POINTS MUST ALL LIE ALONG THE SAME LINE AND GO THROUGH THE ORIGIN.

THEY DO NOT ALL LIE ON THE SAME LINE

16. The space shuttle travels at an orbital speed of about 17,240 miles per hour. How many meters per minute is this? Round to the nearest whole number. (1 miles = 1609.34 meters)

$\frac{17{,}240 \text{ mi}}{1 \text{ HOUR}} \cdot \frac{1609.34}{60} = \frac{27{,}745{,}021.6 \text{ m}}{60 \text{ MIN}} = \frac{462417.026 \text{ m}}{1 \text{ MIN}}$

462,417 METERS PER MINUTE