Mathematics 8 Name:
Chapter 2 Ratio and Rates Review Date: Period:

Note: This worksheet is to be completed **WITHOUT** a calculator.

1. Use the diagram below to find the following ratio in lowest term.

a) Sun to Moon b) Cloud to Everything c) Moon to Thunder

d) Cloud to Thunder to Sun e) Thunder to Sun to Total f) Any Part to Whole Ratio

g) Any Part to Part Ratio h) Any 2 Term Ratio i) Any 3 Term Ratio

2. Match the following terms to the most appropriate description. A term may be used more than once or not at all.

a) part-to part ratio b) two-term ratio c) proportion
d) unit price e) rate f) unit rate

_____ compares two quantities measured in different units

_____ an equation that says that two ratios or two rates are equal

_____ used to compare costs of similar items, often shown per 100 g, per 1 can.. etc

_____ a rate in which the second term is one (e.g., 20 km/h)

3. Write each ratio in simplest form.

a) 8 to 12 b) 1.5 to 10 c) 8 cm to 8 cm

d) $45 to $60 e) 34 to 44 f) 200 cm to 1 m
[Hint: Change the Units]

4. Write each in simplest form as a rate or a ratio.
   a) 200 calories in 40 minutes
   b) 20 phone calls in 4 days
   c) 8 m^2 of material for 6 dresses
   d) 12 books for $18
   e) 10 case workers for every 200 clients
   f) 85 homeruns in 250 at bats

5. Determine the unit rate or unit price.
   a) 10 phone calls in 5 days
   b) 60 Liberals for every 20 NDP
   c) 1250 flights in 50 days
   d) 8 goals in 80 shots
   e) $4.50 per 4 pounds of orange
   f) 18 hours of homework in 12 days

6. Solve for the unknown value using proportions.

   a) $\frac{5}{15} = \frac{x}{3}$
   b) $\frac{12}{144} = \frac{x}{36}$
   c) $\frac{12}{33} = \frac{4}{x}$
   d) $\frac{x}{100} = \frac{30}{20}$
   e) $\frac{28}{x} = \frac{7}{31}$
   f) $\frac{5}{35} = \frac{x}{28}$

g) $\frac{10}{5} = \frac{x}{10.5}$

h) $\frac{5}{15} = \frac{x}{3}$

i) $\frac{y}{121} = \frac{33}{x} = \frac{55}{77}$

j) $\frac{30}{y} = \frac{15}{3} = \frac{x}{2}$

k) $\frac{3}{x} = \frac{x}{12}$ (Challenge)

7. A house valued at $630 000 has property tax of $7000. Find the ratio of property tax to house value.

Answer: $1 to $90

8. A basketball team wins 18 games in a 30 game schedule. What is the ratio of wins to losses?

Answer: 3 wins to 2 losses

9. Jackson has 80 marbles altogether. The ratio of blue marbles to red marbles is 11:5. How many marbles of each colour does Jackson have?

Answer: 55 Blue and 25 Red

10. A map has a scale of 2.5 cm to 145 km. Find the distance between two cities 22.5 cm apart on the map.

Answer: 1305 km

11. In 4 hours, 130 litres of oil flows through a pipe. At this rate, how long will it take 455 litres to flow through the same pipe?

Answer: 14 h

12. On a typical winter day, the ratio of night to daytime with sunshine to daytime with cloud cover is 7:5:4. Based on this information, determine how long the sun was shining on the recording area during a 10 day period.

Answer: 105 Hours

13. Stephanie's family uses 320 kWh of electricity per month. The electricity provider has decided to increase the cost of electricity by $0.25 per kWh? If her family continues to use electricity at the same rate, how much more will in cost in **one year**?

Answer: $96.00

14. A gardener takes a half hour to mow and weed a lawn that measures 20 m by 15 m. He charges $25 per hour. How much should the gardener receive for a lawn that measures 40 m by 30 m? [Hint: Draw a picture!]

Answer: $50

15. The height of an object compared to the length of its shadow is constant for all objects at any given time.

$$\frac{\text{tree height}}{\text{length of shadow}} = \frac{\text{student height}}{\text{length of shadow}}$$

Use this information to help answer the following questions.

a) If a 15 cm shrub casts a 9 cm shadow, what is the height of a student who casts a 1.08 m shadow?

Answer: 1.8 m

b) If a 50 m tower has a shadow 16 m long, how long is the shadow of a student who is 1.5 m tall? Give your answer to the nearest centimetre.

Answer: 0.48 m

16. Speed is defined as $\frac{\text{distance}}{\text{time}}$.

a) If you increase the distance you travel in a certain length of time, do you increase or decrease your speed? Explain.

b) If you decrease the time you take to travel a certain distance, do you increase or decrease your speed? Explain.