Math 8H Assig 4
Ratios and Rate

Name:
Date: Period:

1. Write each of the given ratio in lowest term.

a) 40 : 12 → 10 : 3

b) 5 : 65 → 1 : 13

c) 12 : 54 → 2 : 9

d) 40 : 72 → 5 : 9

e) 144 : 16 → 9 : 1

f) 54 : 32 → 27 : 16

g) 120 : 54 : 28 → 60 : 27 : 14

h) 4.5 : 12 : 15 → 1.5 : 4 : 5

i) 50 : 250 : 17 ×

j) 91 : 143 (÷13, ÷13) → 7 : 11

2. Circle the bigger ratio. Show your work.

a) 6 : 7 or 7 : 8 → $\frac{7}{8}$ $\frac{6}{7}$

b) 6 : 5 or 12 : 11 → $\frac{6}{5}$ $\frac{12}{11}$

c) 8 : 3 or 13 : 5 → $\frac{8}{3}$ $\frac{13}{5}$ → $\frac{40}{15}$ $\frac{39}{15}$

3. Costco cookies have raisins and chocolate chips in the ratio 3:7. Superstore cookies have raisins and chocolate chips in the ratio 5:11. Which brand has the greater ratio of raisins to chocolate chips?

3 : 7 → $\frac{3}{7}$ 5 : 11 → $\frac{5}{11}$ → Superstore

4. If a car traveled 168 km in 3.5 hours, what is the average rate of speed?

$\frac{168}{3.5} = 48$ km/h

5. If refreshments costs $45 for 18people, at the same rate how much would the refreshment cost for 26people?

$\frac{45}{18}$ $\frac{?}{26}$ → 65

45 → 18 → 5 → 2 ×13 → 65 → 26 ×13

6. A car is traveling 50 miles per hour. What is its speed in feet per minute? (1 mile = 1760 yards; 1 yard =3feet)

$\frac{50 \text{ miles}}{60 \text{ min}} \Rightarrow 0.83 \text{ mi/min}$

↓

4400 ft/min.

$0.83 \text{ miles} \cdot \frac{1760 \text{ yd}}{1 \text{ mi}} \cdot \frac{3 \text{ ft}}{1 \text{ yd}}$

7. In a group of 72 students, if the ratio of boys to girls is 5:3, how many boys are in the group

B 40
G 12

5 : 3 → 8

8. If a recipe for a two-pound cake uses 1.5 cups of flour, at the same rate how many cups of flour are needed for a five-pound cake? Express your answer as a mixed number.

2p → 1.5 cups
5p → ? → 3.75 → $3\frac{3}{4}$

9. If $x = 1\frac{1}{4}$ and $y = \frac{3}{8}$, find the ratio of x to y. Express in the form $a:b$ where "a" and "b" are positive integers and GCD(a,b) =1.

$\frac{\frac{5}{4}}{\frac{3}{8}} = \frac{5}{4} \cdot \frac{8^2}{3} = 10 : 3$

10. Mike types 250 words in 20minutes. How many hours will it take him to type a 7500 word paper?

250 → 20 min
7500 → ? → 600 min = 10h

11. A recipe for cookies calls for ½ cup of peanut butter for every $1\frac{1}{4}$ cups of flour. How many cups of peanut of peanut butter are needed in a batch which uses 5 cups of flour?

$\frac{1}{2}$ cup pb → $1\frac{1}{4}$ ft → 5 quarts → 2

? → 5 → 2 quarts

12. Jim earned $7.65 for 4.5 hours he baby-sat. At the same rate, how many dollars should he charge for 3 hours of baby-sitting?

7.65 → 4.5h
? → 3h → 5.10$

13. There are 3 more English teachers than Math teachers in Moscrop Secondary. If the ratio of English to Math teachers is 6 : 5, how many Math teachers are there?

e : m
6 : 5

e = m + 3

$\frac{m+3}{m} = \frac{6}{5}$

m + 3 : m
6 : 5

18 : 15

14. When a water tank is $\frac{1}{3}$ full, it contains 4000 gallons. How many gallons does it contain when it is ¾ full?

4000 → $\frac{1}{3}$ Total: 12000

$\frac{3}{4}$ → 9000

15. The ratio of red marbles to blue is 2:5. If there are 119 marbles, then how many more blue are there than red?

2 : 5

34 : 85

119 ÷ 7 = 17

85 − 34 = 51

16. How many pounds of salt must be added to 75 pounds of 30% salt mixture to obtain a mixture that is 40% salt?

17. James is carrying a 2L bottle that is 10% water and 90% juice. How many mL of water does he need to add to make the mixture 50% water?

18. Sound travels at the rate of 1130 feet per second. How far away is a lightning strike is the sound of thunder reaches you 7 seconds after you see the lightning flash? Assume the speed of light is infinite. Round your answer to the nearest tenth of a mile.

19. The ratio of girls to boys in a school dance is 5 to 4. If twenty boys and ten girls leave, the new ratio of girls to boys will be 3 to 2. How many students were in the dance originally?

20. An elevator can hold the weight of 8 adults or 12 children. How many children could ride on the elevator with 6 adults?

21. Two cyclists start from the same place at 1:15 p.m. One travels north at 24 km/h and the other travels east at 32 km/h. At what time will they be 130 km apart?

22. It took 25 minutes to drive from Andy's home to a math contest in UBC. If the distance travelled was 20km, what was the average speed of the drive in km/hr?

23. The angles of a triangle are in the ratio 2: 3: 4. What are the measures of the angles?

24. The length and the width of a rectangle are in the ratio 9: 7. If the perimeter is 256 cm, what are the dimensions of the rectangle?

25. In the country of Cascadia, 10% of the people are rich, and 90% are poor. Between them, the rich own 90% of the wealth and the poor own the remaining 10%. If "P" is the mean wealth of a poor person, and "R" is the mean wealth of a rich person, what is the value of P/R? Express your answer as a common fraction.

26. There are two candles, one short and thick, the other tall and thin. They burn at different rates. The short, thick candle burns for 120 minutes. Both candles were lit at the same time, and after 30 minutes they were both the same height. After 30 additional minutes, the (originally) tall candle was half the height of the (originally) short candle. What is the total expected burn time, in minutes, of the (originally) tall candle?

27. The hill behind Antonio's house is long and steep. He can walk down it at 4.5 km/hr, but he can walk up it at only 1.5km/hr. If it takes him 6 hours to make the round trip, what is the distance, in kilometers, from his house to the top of the hill?

a) 18 b) $\frac{27}{2}$ c) 9 d) $\frac{27}{4}$ e) 6