1. What is the ratio of vowels to consonants in the word “triangle”? What is the ratio of consonants to vowels?

2. At a local pond you see 4 ducks, 3 frogs, and a turtle. What is the ratio of ducks to other animals? What is the ratio of frogs to turtles? What is the ratio of frogs to all animals?

3. In a combined Grade 5/6 class, there are 12 Grade 5s and 14 Grade 6s. What is the ratio of Grade 5s to Grade 6s in lowest terms? What is the ratio of Grade 6s to all students in lowest terms? Show your thinking.

4. Write a part-to-part and a part-to-whole ratio for the following picture:

5. Write 2 equivalent ratios for each ratio.

a. 3 : 5

b. 14: 36

6. Write an equivalent ratio with 15 as one of the terms.

4 : 6

7. Are the ratios in each pair equivalent? Explain how you know.
a. 2:3 and 8:10

b. 15:25 and 36:60

8. Find the missing term:

a. 7:9 = ____: 27

b. 4: ___ = 16: 24

9. Scale down this ratio by a factor of 4:

28 : 52 = ____ : _____

10. Rocco lives on a farm. The ratio of chickens to cows on the farm is 3:4. If there are 12 chickens, how many cows are there?

11. A recipe uses 3 g of spice for every 5 g of flour. To keep the same flavor, how much spice is needed for 40 g of flour?

12. A smoothie recipe calls for 2 cups of strawberries for every 5 cups of yogurt. If you want to make enough for a party using 20 cups of yogurt, how many cups of strawberries do you need? Explain your reasoning.

13. A car travels 90 km in 3 hours at a constant speed.
a. How far will it travel in 5 hours at the same speed?
b. How long will it take to travel 150 km?

14. In a garden mix, the ratio of soil to compost is 7 : 2.
a. If you have 21 kg of soil, how much compost do you need?
b. If you only have 6 kg of compost, how much soil can you mix?

15. A classroom's student-to-computer ratio is 5 : 2.
a. If there are 40 students, how many computers are there?
b. If the school wants to provide 30 computers at the same ratio, how many students would that serve?

16. A tailor uses 4 meters of fabric to make 3 dresses. At that same rate, how many dresses can she make from 28 meters of fabric? How much fabric would she need for 10 dresses?

17. A trail mix recipe calls for 2 cups of peanuts, ½ cup of raisins, ½ cup of almonds, and ¼ cup of pumpkin seeds.
a. What is the ratio of almonds to pumpkin seeds? Remember, ratios are always expressed using whole numbers.

b. You and a friend tried this recipe and accidentally added ½ cup of pumpkin seeds. How could you adjust the rest of the ingredients, so they are all in the correct ratio?

18. Draw a picture that shows a part-to-part ratio of 2:7.

19. Draw a picture that shows a part-to-whole ratio of 2:7.

20. Write three ratios that are equivalent to 4:6.

21. A quilt block design uses 12 red squares and 18 white squares, as shown in the table:

| Colour | Number of Squares |
|---|---|
| Red | 12 |
| White | 18 |

Maria wants to make smaller quilt blocks that keep the same red-to-blue ratio. How many different smaller quilt blocks (with whole-number squares of each color) could Maria make? Explain your reasoning.

22. Which one doesn't belong:
Which ratio isn't equivalent to the others? Justify your choice with a calculation or drawing.

| | | |
|---|---|---|
| 300 mL juice:<br>150mL water | 500 mL juice:<br>250 mL water | 450 mL juice:<br>200 mL water |

23. What is the same? What is different?
Describe what's the same about these mixes, what's different, and prove they're equivalent.
Farmer A mixes seed and soil at 3 kg seed: 12 kg soil.
Farmer B mixes at 5 kg seed: 20 kg soil.

24. Invent two lemonade recipes that use the same ratio of sugar (in grams) to lemon juice (in mL) but result in different total volumes. Show how you scale one up to match the other.

25. “If you cut both parts of a ratio in half, you get an equivalent ratio.”
True or false? Give two examples in metric (e.g. cm or L) and explain why.

26. A car uses 6 L of fuel to travel 90 km. How far can it go on 10 L? How many liters for 150 km? Show at least two strategies.

27. Find two different length ratios (in centimeters) whose decimal values are between 0.3 and 0.4 (e.g., 3 cm: 10 cm = 0.3). Show your division for each ratio to confirm that the decimal falls within the range.

28. I mix paint at a ratio of 4 parts blue dye to  x parts water. When I add 8 L more water, my ratio becomes 4:12. What was x? List all whole-number answers and justify.

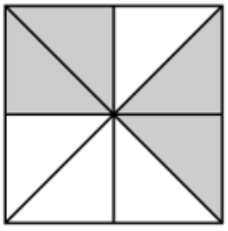
29. On a map, 1 cm represents 5 km of actual (real) distance. Complete the table to show the actual distances.

| Map Scale 1cm on the map: 5km actual distance | |
|---|---|
| 1cm | |
| 2cm | |
| 3cm | |
| 4cm | |
| 5cm | |

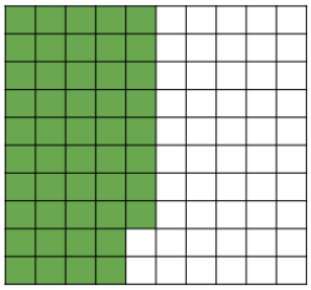
30. You're mixing green paint by combining blue and yellow in a 3 : 5 ratio.
If you start with 3 L of blue and 5 L of yellow, draw a double number line that shows how much yellow you need when you use:
– 6 L of blue
– 9 L of blue
– 12 L of blue

1. Draw a shape and shade 75% of it.

2. What percent of the square is shaded?



3. What percent is shown below?



4. What percent is 0.4? What about 0,04? 0.40? Draw or explain to share your thinking.

5. Which do you think is bigger? 23% of $48 or 48% of $23? Use an estimation strategy and explain your thinking.

6. Use mental math to calculate 10% of the following values:

| | 10% of the value |
|---|---|
| 7 | |
| 36 | |
| 154 | |
| 48026 | |

7. Use mental math to calculate 20% of the following values:

| | 20% of the value |
|---|---|
| 8 | |
| 48 | |
| 360 | |
| 1250 | |

8. Find each percent. Show your thinking.

a. 20% of 40

b. 15% of 200

c. 75% of 80

d. 35% of 300

e. 5% of 70

f. 3% of 890

g. 120% of 60

h. 105% of 70

i. 15.5 % of 90

9. Calculate the total tax (GST and PST in BC) on a sound system that costs $1235.

10. Three Grade 6 classes held a pizza party. There were 90 students in total, and each student chose one slice of pizza. The pizza choices were cheese, chicken, or vegetarian. 36 students selected cheese, 30 selected BBQ chicken, and the rest chose vegetarian. What percentage of students chose vegetarian pizza?

11. A fundraiser sells 120 raffle tickets. If 35% of the tickets win a prize, how many winning tickets are there?

12. Jamal earns a 6% commission on all his sales at a clothing store. Last month, he sold $4250 worth of goods. How much commission did he earn?

13. A dinner bill in a restaurant comes to $72.45. You leave an 18% tip. How much is the tip? What is the total you pay?

14. Mei buys a jacket marked at $89.99 on Robson Street in Vancouver, BC. Calculate the total cost including GST and PST.

15. A pair of running shoes is on sale for 25% off the original price of $120. What is the dollar amount of the discount? What is the sale price?

16. Hugo borrows $2500 at a simple annual interest rate of 4.2%. How much interest will he owe after 1.5 years.

17. The original cost of an item is $150. It is on sale for 75% off. What is the discount and sale price? Use a number line to show your thinking.

18. Celia works as a barista at a café. Her last customer's order came to $200. The customer left her a $30 tip. What percentage of the bill was the tip?

19.Josephine scored 12 baskets out of 30 shots in her first basketball game this year. Her scoring average was then 40%. The next game, she made ten shots and raised her scoring average for both games to 50%. How many of the ten shots in the second game were baskets?

20. Describe how to calculate 25% of a number in three different ways. Use pictures, words, numbers and/or symbols to represent your thinking.

21. How is multiplying 0.01 x 68 similar to multiplying 0.68 x 100?

22. What is a good estimate for 42% of 85? Explain your strategy.

23. Describe how knowing 75% of a number helps you figure out 10% of that number.

24. Jayla and Rhea paid the same amount of money for their sweaters, but Jayla got her sweater at a 40% off sale, and Rhea got hers at a 20% off sale. How were the original prices of the sweaters related? Explain.

25. Which one doesn't belong? Which expression isn't equivalent to the others. Justify your thinking using math.

| | |
|---|---|
| 8 % of $250 | 0.08 × 250 |
| 250 × 8 % | 250 ÷ 12.5 |

26. Justify your thinking using math. Would you rather earn a 5 % sales commission on $2400 in sales, or a 7 % commission on $1 800 in sales? Explain which choice gives you more money and why.

27. Describe what's the same about how you calculate the tax and what's different
Scenario A: A $60 item has a 10 % sales tax.
Scenario B: A $120 item has a 20 % sales tax.

28. Invent two restaurant-tip problems: one using 18 % and another using 20 %. Make the bill totals different but find a way so both tips come out to whole dollars. Show how you chose your bill amounts.

29. True or False? Justify your thinking using math.
If you double the price of an item and keep the discount percent the same, the dollar amount saved also doubles.