

1. Ratio & Proportion

Grade 9
R-1, R-2, R-3

Materials: pattern blocks
recipe
flyers and brochures

1. Looking at a triangle, a square and a hexagon express their perimeters as ratios:
 - a) triangle : square
 - b) hexagon : triangle
 - c) square : hexagon : triangle

2. Look at the recipe and compare quantities using ratios. Is it important to note the units? Give at least 5 different ratios.

3. Look at the flyers and brochures and write 5 questions using ratios. Provide the answers to your questions.

4. Use the blocks to show how to reduce 15:60:30 as a ratio in lowest terms.

5. In your own words, define ratio.

When you have completed this station,
place your answer sheet in your portfolio.
Do not forget to label your entry.

Please tidy up the station.

2. Ratio & Proportion

Grade 9

R-1, R-2, R-23

Materials: pattern blocks
rainbow cubes

- 1 Use the blocks to set up three sets of equivalent ratios. One set should have at least four ratios. Record using sketches and writing the ratios beside each set.
2.
 - a) Is the ratio 14:16 equivalent to 21:24? Explain your answer.
 - b) Do they form a proportion?
 - c) In your own words define proportion.
3. Food coloring is usually in primary colors (plus green). You can then make secondary colors by adding various ratios of the basic colors. Some suggestions are:

Orange:	3 drops red to 6 drops yellow
Pistachio:	2 drops yellow to 6 drops green
Brown:	6 drops red to 6 drops yellow to 4 drops blue
Peach:	2 drops red to 5 drops yellow

 - a) Write each ratio in lowest terms.
 - b) Tania wants to make orange. She accidentally puts 6 drops of red instead of yellow into her icing. What can she do to solve her problem?
 - c) Allan needs a lot of pistachio colored icing. He uses 12 drops of yellow. Explain how he can determine how many drops of green is needed using equivalence to solve the problem.
 - d) Mike wants to use peach to ice a cake for his girl friend. It is a large cake so he decides to use all the yellow in the box. He counts 58 drops. He wishes he had stopped at 55 so that he could easily calculate the amount of red using equivalence or by multiplying by 11. He phones his friend Paul who tells him not to fret because he can use the products of the means and the extremes to find the missing proportion. Mike does not have a snitch of what Paul is talking about. Paul tells Mike to get a paper and pencil. He tells Mike to “cross multiply”. Write the rest of this conversation as Paul explains to Mike what to do. Use quotation marks and write the conversation until they hang up. By the way, what was Mike’s girlfriend reaction to the surprise cake?

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3. Ratio & Proportion

Grade 9

R-8, R-9

Materials: Fuel Consumption Guide

- 1. Why are consumers interested in knowing how much gas is used for the different models of cars.**
- 2. The guide gives statistics for both city driving and for highway driving. Why are these different?**
- 3. Use the guide to assess the efficiency of your family vehicle if it is included in this guide. If not, try to find this information by experimenting, by looking at the information provided when the vehicle was purchased or by contacting a dealership.**
- 4. Make up 4 questions and answer them.**
- 5. What other criteria do consumers consider when purchasing a vehicle? Conduct a research to find out if dealerships know what are the three top reasons why people choose the vehicle that they do.**

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4. Ratio & Proportion

Grade 9
R-1, R-2, R-9

Materials: current reference materials

1. Are each of the following ratios or rates?
 - a) three red blocks to 5 blue blocks
 - b) the number of litres of gasoline per kilometre
 - c) the cost of milk per litre
 - d) the number of grams of cheese to the number of grams of meat per pizza
 - e) a particular fertiliser has 10:30:10 written on the bag
 - f) the time it takes to go from Regina to Saskatoon when travelling at 100 km / h

2. Look in current reference books, magazines and newspapers to find ten examples of rates. Record and explain why they are rates and not ratios. If you are interested in sports, you may wish to browse through sports statistics to find your data.

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5. Ratio & Proportion

Grade 9

R-18

Materials: grids 10 x 12

1.
 - a) Shade in grids to show each of the following percents.
 - b) To record, glue onto a piece of paper and write the percent that each represents.
 - c) Write the percent as a decimal number and as a fraction (or mixed number). Remember that your work needs to be neat.

2.
 - a) Explain how it is possible to have a percentage over 100%.
 - b) What is one way to have 105% on a test?

3.
 - a) Percentages that are less than 1 are difficult to visualise. Use diagrams to help you model what a percent less than 1 looks like.

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6. Ratio & Proportion

Grade 9
R-18

Materials: large 10 x 10 grid

1. **John made a chart to illustrate percents. He started with a large 10 x 10 grid. He folded it in half and shaded half the squares. He counted the shaded squares and wrote**

$$\frac{50}{100} = 50\%$$

He then folded the unshaded part in half and shaded the new half a different color. He counted the shaded parts and wrote

$$\frac{25}{100} = 25\%$$

He did this three more times.

Use the grid to demonstrate what John is doing and complete his chart.

2. **Use the results of your work to show**

a) 150%, b) 212% c) $103\frac{1}{8}\%$

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7. Ratio & Proportion

Grade 9
R-24d

Materials: Real estate brochures

1.
 - a) Maxine bought a house three years ago. She paid \$110 000.00. This year, she was transferred to Vancouver. She sold her house for 95 000.00. What was her rate of loss?
 - b) In Saskatoon, Maxine received a salary of \$45 000.00. Now, in Vancouver, she receives \$68 000.00. What is her rate of gain?
 - c) If you consider the cost of living factor, Will Maxine have a lot more money at the end of every month after all her expenses if she continues about the same style of life that she had in Saskatoon?
 - d) Make a list of all the advantages and disadvantages that affect the decision for a family to move from one area to the other.
2. Look at the real estate brochures and make up a problem that involves profit-loss.

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8. Ratio & Proportion

Grade 9
R-24f

Materials: bank rates
newspapers

1. **Look at the information provided or research to find the current rates of interest at local financial institutions.**
Calculate the simple interest earned on an investment of \$1500 invested at that rate.
2. **Look at brochures and newspaper ads to find the rates of interest charge by different companies on motor vehicles. Calculate the amount remaining once the required down payment is given (some may not require a down payment) and then calculate the amount of interest that will be paid over the amount of years that they suggest. What will be the “actual” price of the vehicle at this rate?**
3. **What effect does the amount of down payment paid have on the total cost?**

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9. Ratio & Proportion

Grade 9

R-24

Materials: calculator
graphing calculator or computer (optional)

1. **Suppose you have the \$15 000.00 to invest. You don't know if you should put it in a savings plan with simple interest or with compound interest. A friend tells you that there is no decision. You should always choose compound interest if there are no other conditions attached to either plan.**

You are not convinced so you set out to figure it out for yourself. What do you do?

2. a) **Suppose that your grandparents placed \$1000.00 in the bank the day that you were born at a rate of 8% if the interest is compounded annually?**
- b) **How much would you have when you reached 60 years of age?**

To save time you may want to use a spreadsheet on a computer to calculate this.

(You may want to use a graphing calculator if one is available to you. These can be programmed to calculate this for you)

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