



Mississauga Secondary School

550 Courtney Park Drive West, Mississauga, ON, L5W 1L9 905-564-1033 FAX: 905-564-0052

Math Review Activities for Grade 8 Students

The following package has been prepared by the Mathematics Department at Mississauga Secondary School. It includes practice in the areas we feel are most important for students to be proficient in as they enter Grade 9 mathematics at the academic or applied level. These activities have been taken from the Gap Closing activities developed by the Ministry of Education as part of the Math Gains initiative.

How to use this package:

The package has been broken into four major areas: Fractions, Decimals, Integers and Proportional Reasoning. Each area begins with a set of practice questions called a Diagnostic. This is followed by the solutions for the set as well as suggested materials if your child has had difficulty with a particular question. There are resources available for more practice at the following website:

<http://www.edugains.ca/newsite/math2/gapclosingintermediatesenior.html>

Fractions:

Diagnostic

1. List three fractions equivalent (equal) to each fraction.

a) $\frac{2}{3}$

b) $\frac{8}{10}$

c) $\frac{24}{100}$

2. Use a greater than (>) or less than (<) sign to make these statements true.

a) $\frac{1}{2} \square \frac{3}{8}$

b) $\frac{3}{8} \square \frac{3}{10}$

c) $\frac{5}{6} \square \frac{8}{9}$

d) $\frac{9}{5} \square \frac{5}{9}$

e) $2\frac{1}{3} \square 1\frac{5}{4}$

f) $1\frac{1}{8} \square 1\frac{3}{10}$

3. Order these values from least to greatest:

$\frac{4}{10}$ $\frac{1}{3}$ $\frac{2}{7}$ $\frac{6}{10}$ $1\frac{1}{3}$ $2\frac{7}{10}$

4. Draw a picture to show why each statement is true:

a) $\frac{2}{5} + \frac{2}{5} = \frac{4}{5}$

b) $\frac{2}{5} + \frac{1}{4} = \frac{13}{20}$

5. Add each pair of numbers.

a) $\frac{4}{9} + \frac{2}{9}$

b) $\frac{2}{3} + \frac{1}{5}$

c) $\frac{3}{8} + \frac{5}{6}$

d) $\frac{9}{4} + \frac{7}{4}$

e) $\frac{8}{3} + 2\frac{1}{2}$

f) $3\frac{2}{3} + 4\frac{5}{8}$

6. Write a story problem that you could solve by adding $\frac{2}{3}$ and $1\frac{1}{2}$.

7. Draw a picture to show why each statement is true:

a) $\frac{7}{8} - \frac{2}{8} = \frac{5}{8}$

b) $\frac{9}{10} - \frac{2}{5} = \frac{5}{10}$

8. Subtract:

a) $\frac{7}{8} - \frac{3}{8}$

b) $\frac{2}{3} - \frac{1}{5}$

c) $\frac{5}{6} - \frac{1}{4}$

d) $\frac{8}{5} - \frac{2}{3}$

e) $4 - 1\frac{2}{3}$

f) $4\frac{1}{3} - 2\frac{3}{5}$

9. Write a story problem that you could solve by subtracting $1\frac{1}{3}$ from $3\frac{1}{4}$.

10. Draw a picture to show why each statement is true:

a) $\frac{2}{3} \times \frac{3}{5} = \frac{2}{5}$

b) $\frac{2}{3} \times \frac{5}{8} = \frac{10}{24}$

11. Multiply each pair of numbers.

a) $\frac{3}{5} \times \frac{5}{6}$

b) $\frac{4}{5} \times \frac{2}{3}$

c) $\frac{9}{4} \times \frac{2}{3}$

d) $2\frac{1}{3} \times 2\frac{1}{4}$

12. Describe a situation where you might multiply $\frac{2}{3} \times \frac{5}{6}$.

13. Draw a picture to show why each statement is true:

a) $\frac{8}{10} \div \frac{2}{10} = 4$

b) $\frac{8}{10} \div \frac{3}{10} = 2\frac{2}{3}$

14. Divide:

a) $\frac{6}{9} \div \frac{2}{9}$

b) $\frac{5}{8} \div \frac{2}{8}$

c) $\frac{9}{4} \div \frac{3}{8}$

d) $\frac{8}{3} \div \frac{5}{6}$

e) $\frac{3}{10} \div \frac{5}{6}$

f) $3\frac{1}{2} \div 4\frac{1}{3}$

15. A painter uses $2\frac{1}{2}$ cans of paint to paint $\frac{1}{4}$ of a room. How much of a room could he paint with 1 can of paint?

16. Write an equation involving fractions and an operation sign that you would complete to solve the problem.

a) Mia read $\frac{5}{8}$ of her book. How much of her book does she have left to read?

b) Mia read $\frac{5}{8}$ of her book. She read $\frac{1}{3}$ of that amount on Monday. What fraction of the whole book did she read on Monday?

c) Mia read $\frac{5}{8}$ of a book. If she read $\frac{1}{5}$ of the book each hour, how many hours was she reading?

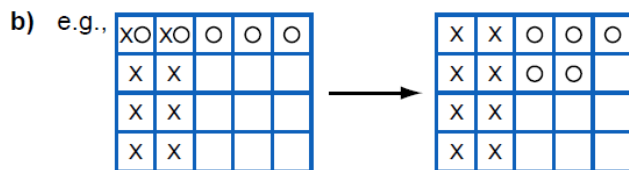
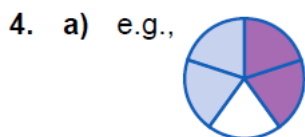
Evaluating Diagnostic Results	Suggested Intervention Materials
If students struggle with Questions 1-3	use <i>Comparing Fractions</i>
If students struggle with Questions 4-6	use <i>Adding Fractions</i>
If students struggle with Questions 7-9	use <i>Subtracting Fractions</i>
If students struggle with Questions 10-12	use <i>Multiplying Fractions</i>
If students struggle with Questions 13-15	use <i>Dividing Fractions</i>
If students struggle with Questions 6, 9, 12, 15, and 16	use <i>Relating Situations to Fraction Operations</i>

Solutions

1. a) e.g., $\frac{4}{6}$, $\frac{6}{9}$ and $\frac{12}{18}$
 b) e.g., $\frac{4}{5}$, $\frac{16}{20}$ and $\frac{32}{40}$
 c) e.g., $\frac{6}{25}$, $\frac{12}{50}$, $\frac{18}{75}$

2. a) >
 b) >
 c) <
 d) >
 e) >
 f) <

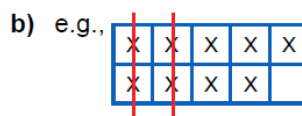
3. $\frac{2}{7}$ $\frac{1}{3}$ $\frac{4}{10}$ $\frac{6}{10}$ $1\frac{1}{3}$ $2\frac{7}{10}$



5. a) $\frac{6}{9}$ b) $\frac{13}{15}$
 c) $\frac{29}{24}$ d) $\frac{16}{4}$
 e) $5\frac{1}{6}$ f) $8\frac{7}{24}$

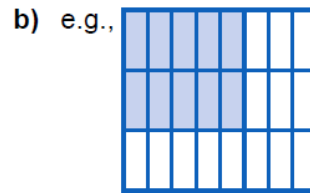
Note: Equivalent forms are acceptable.

6. e.g., There were $1\frac{1}{2}$ Hawaiian pizzas and $\frac{2}{3}$ of a vegetarian pizza left. How many pizzas were left altogether?



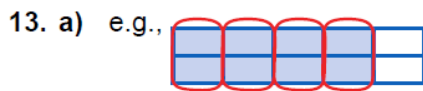
8. a) $\frac{4}{8}$ b) $\frac{7}{15}$
 c) $\frac{7}{12}$ d) $\frac{14}{15}$
 e) $2\frac{1}{3}$ f) $1\frac{11}{15}$

9. e.g., I had $3\frac{1}{4}$ cartons of eggs and used $1\frac{1}{3}$ of them for some baking. How many cartons of eggs are left?



11. a) $\frac{1}{2}$
 b) $\frac{8}{15}$
 c) $\frac{3}{2}$
 d) $\frac{63}{12}$

12. e.g., If $\frac{5}{6}$ of a project had been completed, and one student had done $\frac{2}{3}$ of it, then $\frac{2}{3} \times \frac{5}{6}$ tells what part of the whole project she had completed.



14. a) 3
 b) $2\frac{1}{2}$
 c) 6
 d) $\frac{16}{5}$
 e) $\frac{9}{25}$
 f) $\frac{21}{26}$

15. $\frac{1}{10}$ of a room

16. a) $1 - \frac{5}{8} = ?$
 b) $\frac{1}{3} \times \frac{5}{8} = ?$
 c) $\frac{5}{8} + \frac{1}{5} = ?$

Decimals:

Diagnostic

DO NOT USE A CALCULATOR FOR THIS DIAGNOSTIC.

1. Estimate each product, without calculating.

a) 2.4×1.6

b) 14.28×6.9

c) 2.345×1.2

2. Calculate each product.

a) 5×4.2

b) 6×7.25

c) 0.9×0.8

d) 1.9×0.8

e) 0.1×3.5

3. Suppose you know that $32 \times 45 = 1440$.

Explain why 3.2×4.5 has to be 14.40.

4. Estimate each quotient without calculating.

a) $6.5 \div 1.6$

b) $26.88 \div 3.2$

c) $7.316 \div 1.9$

5. Calculate each quotient:

a) $6.4 \div 0.4$

b) $6.4 \div 0.04$

c) $12.2 \div 5$

6. How can you predict why $3.4 \div 2$ will be one tenth of $3.4 \div 0.2$ without calculating either quotient?

7. In which order would you perform the calculations that are part of this question?
 $4.2 + (8.5 - 4.2) \div 0.6$

8. a) Circle the correct equation.

$$1.5 + 4.5 \times 2.5 = 15 \quad \text{or} \quad 1.5 + 4.5 \times 2.5 = 12.75$$

b) Explain why it is correct.

9. Circle the greater expression. Explain your thinking.

$$6.4 \times 1.5 + 0.4 \div [4.4 + 0.6] \quad \text{or} \quad 6.4 \times 1.5 + (0.4 \div 4.4) + 0.6$$

Evaluating Diagnostic Results	Suggested Intervention Materials
If students struggle with Questions 1–3	use <i>Multiplying Decimals</i>
If students struggle with Questions 4–6	use <i>Dividing Decimals</i>
If students struggle with Questions 7–9	use <i>Order of Operations</i>

Solutions

- e.g., 4
 - e.g., 3
- 21.0
 - 0.72
 - 0.35
- e.g., 3.2×4.5 is 32 tenths \times 45 tenths, so it is 32×45 tenths \times tenths, which would be hundredths.
- e.g., 4
 - e.g., 4
- 16
 - 2.44
- e.g., 0.2 is $\frac{1}{10}$ as big as 2, so 10 times as many groups of 0.2 will fit into 3.4
- I would first do the subtraction, then the division, and then the addition.
- the second one.
 - BEDMAS says do multiplication calculations before doing addition calculations.
- the second one, e.g., The first part is the same so it does not matter. The difference is whether you add $0.4 \div 5$ which is 0.08 or whether you add 0.6 and some more. The second one is obviously more.

Integers:

Diagnostic

1. Draw a number line from -10 to $+10$. Mark the locations of these integers:
 $-2, -8, 0, +5$.

2. Describe three things that the number -2 might represent.

3. Order these integers from least to greatest: $6, -2, 3, -8, -20, +15, 9, -9$.

Explain how you know which number is the least.

4. Explain why $-2 < -1$, even though $+2 > +1$.

[Recall that $<$ means "less than" and $>$ means "greater than."]

5. Add each pair of integers.

a) $(-3) + (-8)$

b) $(-20) + (+16)$

c) $(+9) + (-13)$

d) $(+13) + (-3)$

6. Use a model to show why your answer to Question 5c) makes sense.
Explain the model.

7. Subtract each pair of integers.

a) $4 - (-2)$

b) $8 - (+16)$

c) $(-9) - (-2)$

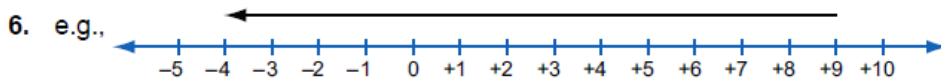
d) $(-11) - (-18)$

Evaluating Diagnostic Results	Suggested Intervention Materials
If students struggle with Questions 1–4	use <i>Representing and Comparing Integers</i>
If students struggle with Questions 5–8	use <i>Adding and Subtracting Integers</i>
If students struggle with Questions 9–12	use <i>Multiplying and Dividing Integers</i>
If students struggle with Questions 13–14	use <i>Order of Operations</i>

Solutions



2. e.g., 2 below par on a golf course, 2° below zero for a temperature, a loss of 2 dollars
3. $-20, -9, -8, -2, 3, 6, 9, +15$; e.g., I know that -20 is the least, since it is negative and farthest back from 0.
4. e.g., Since 2 is farther to the right of 0 than 1, it is bigger. That means that its opposite, -2 , is also farther from 0. Since it is farther to the left, it is less.
5. a) -11
 b) -4
 c) -4
 d) $+10$



Start at 9 and go 13 back in the direction of -13 from 0.

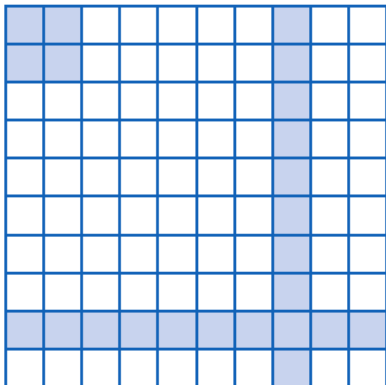
7. a) 6
 b) -8
 c) -7
 d) $+7$

Proportional Reasoning:

Diagnostic

- There are 8 boys and 3 girls on the Tech Team.
 - Write the ratio of the number of girls to number of boys in the form $\square : \square$.
 - Write the ratio of the number of boys to the number on the whole team.
 - Another Tech Team of 11 students has a higher ratio of number of girls to number of boys. What could the ratio be?
- The ratio of Vada's height to Melissa's height is 5 : 4.
 - Who is taller?
 - Is she twice as tall? How do you know?
- Valene's running rate is 0.18 km/min. Explain what that means.

4. a) What percent of the grid is shaded?



- b) What percent is not shaded?

5. Indicate whether each statement does or does not make sense by circling your choice.

a) 8% of something is a lot of it.

MAKES SENSE DOES NOT MAKE SENSE

b) 80% of something is a lot more than half of it.

MAKES SENSE DOES NOT MAKE SENSE

c) 35% of the people in a high school building on a school day are adults, not students.

MAKES SENSE DOES NOT MAKE SENSE

6. Explain your answer to Question 5c.

7. Complete the missing amounts so that the ratios are equivalent.

a) $2 : 7 = \square : 14$

b) $5 : 10 = \square : 8$

c) $12 : \square = 3 : 5$

8. Suppose your heart beats 144 times in 2 minutes. How many times would you expect it to beat in 5 minutes?

9. What fraction is equivalent to each percent?

a) 40%

b) 112%

c) 3.5%

10. Three bars of soap cost \$2.61. At this rate, how much would each number of bars below cost?

a) 6 bars

b) 8 bars

11. A car goes 78 km in 45 minutes. At that speed, how far would it go in an hour?
12. A 2.6 L container of juice costs \$3.00. How much are you paying for 1 L?
13. Suppose the ratio of the number of boys to the number of girls in a class is 7 : 3. What percent of the class is girls?
14. A T-shirt is priced at \$12.99. The store is offering a discount of 30%. How much will the shirt cost (before taxes)?
15. Tell if each statement is TRUE or FALSE by circling the correct word.
- | | | |
|----------------------------|------|-------|
| a) 40% of 120 is about 30. | TRUE | FALSE |
| b) 20% of 83 is about 16. | TRUE | FALSE |
| c) 11% of 198 is about 20. | TRUE | FALSE |
16. Explain your answer to Question 15a.
17. Lea spent \$25 of the money she saved. She still has 60% of her money left. How much does she have left?

Evaluating Diagnostic Results	Suggested Intervention Materials
If students struggle with Questions 1–6	use <i>Describing and Representing Ratios, Rates and Percents</i>
If students struggle with Questions 7–9	use <i>Equivalent Forms of Rates, Ratios and Percents</i>
If students struggle with Questions 10–13	use <i>Solving Ratio and Rate Problems</i>
If students struggle with Questions 14–17	use <i>Solving Percent Problems</i>

Solutions

- a) 3 : 8 b) 8 : 11 c) e.g., 4 : 7
- a) Vada b) No, e.g., 8 : 4 would be twice as tall, not 5 : 4
- e.g., She goes 0.18 kilometres every minute.
- a) 23% b) 77%
- a) DOES NOT MAKE SENSE b) MAKES SENSE
c) DOES NOT MAKE SENSE
- e.g., 35% is more than one fourth so it would mean more than 1 person in 4 is an adult; it would be like having one teacher for every 3 students and that does not make sense even if you include administrative staff and custodians.
- a) 4 b) 4 c) 20
- 360 times
- a) e.g., $\frac{40}{100}$ b) e.g., $\frac{112}{100}$ c) e.g., $\frac{7}{200}$
- a) \$5.22 b) \$6.96
- 104 km
- about \$1.15
- 30%
- \$9.09
- a) FALSE b) TRUE c) TRUE
- e.g., 10% of 120 is 12, so 40% is 48, not 30.
- \$37.50