

Mathematics 8  
Final Review

Part A: Fractions (No Calculators)

1. Simplify each of the following.

a)  $\frac{36}{48}$

b)  $\frac{48}{14}$

c)  $\frac{9}{24}$

d)  $\frac{48}{60}$

2. Supply the missing element required to make the fractions equivalent.

a)  $\frac{2}{3} = \frac{x}{21}$

b)  $\frac{3}{8} = \frac{12}{x}$

c)  $\frac{7}{12} = \frac{x}{84}$

d)  $\frac{5}{x} = \frac{60}{72}$

3. Add or Subtract. Leave all improper fractions as mixed fractions

a)  $\frac{7}{9} + \frac{2}{5}$

b)  $\frac{11}{7} - \frac{3}{4}$

c)  $\frac{3}{4} + \frac{3}{10}$

d)  $\frac{5}{3} - \frac{7}{8}$

e)  $5\frac{1}{10} + 1\frac{2}{5}$

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

g)  $\frac{3}{10} + 2\frac{2}{15}$

h)  $8\frac{3}{4} - 6$

4. Which fraction is larger,  $\frac{5}{8}$ ,  $\frac{2}{3}$  or  $\frac{3}{4}$ 5. Water in a pond is at a depth of  $10\frac{3}{8}$  cm. After removing a rock from the pond the level drops  $1\frac{5}{6}$  cm. What is the new depth of the pond?

6. Multiply or divide.

a)  $\frac{2}{3} \times \frac{5}{7}$

b)  $\frac{4}{3} \div \frac{8}{15}$

c)  $\frac{11}{15} \times \frac{25}{33}$

d)  $\frac{5}{6} \div \frac{15}{16}$

e)  $\frac{5}{6} \times \frac{3}{2} \times \frac{36}{5}$

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

g)  $\frac{2}{3} \div 6$

h)  $3\frac{1}{3} \times 3\frac{3}{4}$

i)  $3\frac{3}{10} \div 2\frac{5}{8}$

j)  $1\frac{2}{3} \div 1\frac{1}{4} \times 2$

7. What is  $\frac{2}{3}$  of a share of \$87?8. An engine uses  $\frac{3}{8}$  litres of gasoline every hour. At this rate, how much gasoline will this engine use in  $3\frac{1}{2}$  hours?9. The Indian Ocean covers about  $\frac{1}{7}$  of the Earth's surface. The area of the Pacific Ocean is about  $2\frac{1}{3}$  times the area of the Indian Ocean. What fraction of the Earth's surface does the Pacific Ocean cover?10. In Saskatoon, it snowed for  $3\frac{1}{2}$  h on Wednesday and  $2\frac{1}{2}$  h on Thursday.

a) How many times as long did it snow on Wednesday as on Thursday?

b) How many times as long did it snow on Thursday as on Wednesday?

11. A flagpole is installed so that  $\frac{1}{5}$  of its height is below the ground. If 2 m of the flagpole is below the ground, what is the height of the flagpole above the ground?

Part B: Integers (No Calculators)

1. Add or Subtract.

- a)  $-8 + 4$                       b)  $-8 + -2$                       c)  $5 + -3$                       d)  $-8 - 2$
- e)  $-6 - (-3)$                       f)  $8 - (-9)$                       g)  $-5 + -2 + 2$                       h)  $-7 + 6 + -3$
- i)  $7 + 6 - (-5)$                       j)  $-82 - (-41) + -41$                       k)  $15 + (-13) - 2 + -1$

2. Multiply or Divide.

- a)  $(-2)(4)$                       b)  $(-4)(-5)$                       c)  $(-15)(8)$                       d)  $(-3)(-2)(-3)(1)(-1)$
- e)  $(15) \div (-5)$                       f)  $(-56) \div (-8)$                       g)  $\frac{-90}{-5}$                       h)  $(88) \div (-4) \div (-2)$

3. Calculate each using the rules for order of operations.

- a)  $15 + -21 \div 3 + (-3)$                       b)  $7 + 96 \div 3$
- c)  $-8 \times -9 + -15 \div -5$                       d)  $-6 + -2 + -3 \times -4$
- e)  $-2 \times [-6 - (-12)] + 10$                       f)  $14 \div (5 - 7) - 3 \times (-4)$

4. Absolute zero ( $-273^{\circ}\text{C}$ ) is the coldest possible temperature. What is the difference between normal room temperature ( $18^{\circ}\text{C}$ ) and absolute zero?

5. The temperature in Inuvik, Northwest Territories, increased at the same rate from  $-22^{\circ}\text{C}$  at 9:00 am to  $-8^{\circ}\text{C}$  at 4:00 pm one day. What was the temperature at 2:00 pm?

6. Len's car uses 11 L of gasoline per 100 km of city driving and 8 L of gasoline per 100 km of highway driving. One month, he drove 600 km in the city and 1500 km on highways. How much gasoline did he use that month?

7. Complete each statement.

- a)  $? \times 8 = -32$                       b)  $-6 \times ? = 24$                       c)  $? \div 8 = -3$                       d)  $-21 \div ? = 7$

Part C: Proportion

1. Calculate the value(s) of the missing term(s).

- a)  $6 : 5 = \underline{\hspace{1cm}} : 25$                       b)  $12 : 27 = 4 : \underline{\hspace{1cm}}$                       c)  $7 : 2 = \underline{\hspace{1cm}} : 15$
- d)  $\underline{\hspace{1cm}} : 4 : 5 = 27 : 36 : \underline{\hspace{1cm}}$                       e)  $2.5 : \underline{\hspace{1cm}} : 10.5 = \underline{\hspace{1cm}} : 17 : 42$

2. The average person blinks 25 times each minute. How many times would a person blink in:  
a) 2 days                      b) 48 minutes                      c) 0.5 of a minute                      d) 36 seconds

3. The conversion for kilometres to miles is that  $1 \text{ km} = 0.621 \text{ miles}$ . How far is it to Calgary from Edmonton in kilometres if the distance in miles is 180?

4. Jerry scores an average of 1.75 points per game in hockey. How many points should he get in 40 games at this rate?

5. The ratio of the length of a rectangle to its width is 7:4. If the width is 42 centimetres, what is the length of this rectangle?
6. Which is a better buy? 5 kg of apples for \$2.85 or 7 kg of apples for \$3.85
7. A 24 m tree casts a 42 m shadow. How tall is a building with a 147 metre shadow?
8. Bananas are advertised at 3 kilograms for \$1.47. How much would 7 kilograms cost?
9. On a map 2.5 cm represents 400 km. What distance would a 3.8 cm line represent?
10. How long would it take to cover a distance of 800 km at a rate of 120 km/h?
11. Two partners in a business share the profits in a ratio of 3:5. If the business made \$5760 in January what does each partner receive in profit?
12. Three eighths of the students in a class of 32 students are boys.
  - a) How many students are boys?
  - b) What is the ratio of girls to total students?
  - c) What is the ratio of girls to boys?
13. What is the fuel consumption for each vehicle in L/100 km? Which vehicle has the lowest fuel consumption?

Vehicle	Distance (km)	Fuel Used (L)
1	190	20.2
2	460	44.7
3	800	85

Part D: Percent

1. Complete the chart.

	Percent	Basic Fraction	Decimal
A		$\frac{4}{5}$	
B	20%		
C			0.75
D		$\frac{4}{7}$	
E	6.07%		
F			.3333....
G		$2\frac{1}{6}$	
H	300%		
I			.002
J	$\frac{3}{4}\%$		

2. Solve for the missing value.

a) 50% of 30 is \_\_\_\_\_

b) 30% of 70 is \_\_\_\_\_

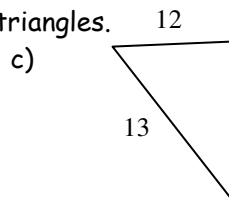
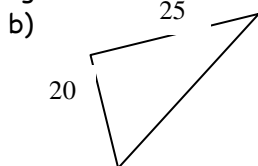
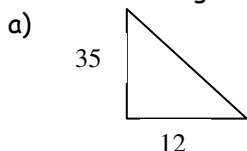
c) What is 35% of 80

d) What percent is 14 out of 70

- e) 15.5 is what % of 77.5                      f)  $\frac{1}{4}\%$  of 80 is what
- g) 240% of 3500 is what                      h) What is 45% of 96
- i) 80 is 60% of what                      j) 70% of what is 45
- If Ron correctly answers 47 out of 75 questions on an exam, what is his percent?
  - Jean earned \$40 babysitting one weekend and spent 15% of her earnings. How much did she spend?
  - The attendance at school on Friday was 551 students. This was 95% of the total enrolment. What is the total enrolment of the school?
  - Jason lives 16 blocks from the school. Each day he walks 3 blocks to catch the bus. What percent to the distance to school does he walk?
  - Ken received a mark of 80% on a science exam. How many questions did he get correct if there were 240 questions on the exam?
  - Calculate the amount of discount on a \$250 pair of skis if the rate of discount is 15%.
  - After receiving a discount of 20%, Kelly paid \$48 for a baseball glove. What was the regular price of this glove?
  - Basketball shoes regularly priced at \$108 were on sale for \$96. What was the percent discount on these shoes?
  - Amarjit sold goods valued at \$15 000. If the rate of commission was 6%, what amount of money did he earn?
  - If the list price on a pair of skates is \$75 and the sales tax is 7%, calculate the total cost.
  - The cost of a downloaded album is \$10.99. Added to this cost is a 10% before-tax processing fee, 5% GST, and 7% PST. What is the total cost of the album?

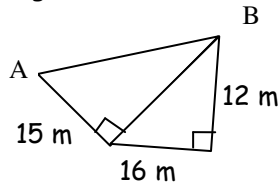
Part E: Powers

- Determine the squares of the following numbers  
a) 8                      b) 13                      c) 17                      d) 80
- Determine the square root of each perfect square.  
a) 121                      b) 900                      c) 49                      d) 256
- Identify the perfect square that lies on either side of 139. Use these values to estimate the square root of 139.
- Find the length of the missing side of the following right triangles.



5. A ladder 6.25 metres long rests against a wall at a point 5 metres from the ground. How far is the foot of the ladder from the wall?
6. What is the longest straight line that can be drawn on a rectangular piece of paper that is 8 cm wide and 15 cm long?

7. What is the distance from A to B?



Part F: Algebraic Equations

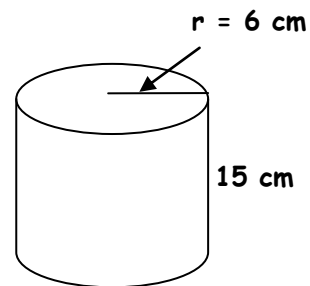
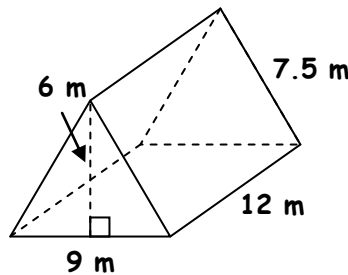
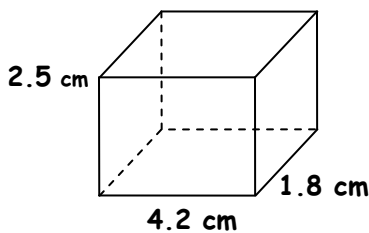
1. Solve.

- |                                |                     |                           |
|--------------------------------|---------------------|---------------------------|
| a) $x - 7 = 5$                 | b) $-5 + x = -8$    | c) $-15 = x - 12$         |
| d) $-2x = 18$                  | e) $-30 = -5x$      | f) $\frac{x}{7} = 3$      |
| g) $12 = -\frac{1}{3}x$        | h) $3x + 2 = 11$    | i) $-5x - 4 = 31$         |
| j) $3 - 4x = -21$              | k) $43 = 7 - 4x$    | l) $-2 + \frac{x}{8} = 5$ |
| m) $7 - \frac{x}{3} = -2$      | n) $3(2x + 4) = 36$ | o) $-2(4x - 8) = -24$     |
| p) $3(5x - 4) - 2(6x + 3) = 9$ |                     |                           |

2. Jason's age is three years fewer than  $\frac{1}{3}$  his father's age. Jason is ten years old. What equation models this situation? How old is Jason's father?
3. Elijah works in a diamond mine. When he works the late shift, \$2/h is added to his regular hourly wage. Last week, he worked the late shift for a total of 40 h and made \$960. Write and solve an equation to determine Elijah's regular hourly wage.

Part G: Measurement

Use the shapes below to answer the following questions.

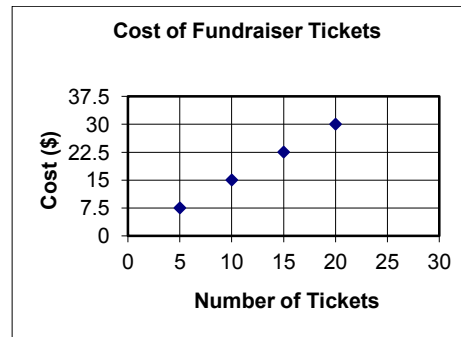


1.
  - a) Draw the net of the right rectangular prism.
  - b) Calculate the surface area of the right rectangular prism.
  - c) Calculate the volume of the right rectangular prism.
  - d) Draw the net of the right triangular prism.
  - e) Calculate the surface area of the right triangular prism.
  - f) Calculate the volume of the right triangular prism.
  - g) Draw the net of the cylinder.
  - h) Calculate the surface area of the cylinder.
  - i) Calculate the volume of the cylinder.
  
2. Calculate the volume and surface area of a cube with height 7 m.
  
3. A sandbox measures 2 m long, 1.6 m wide and 0.4 m deep. How much sand is required to fill the sandbox to  $\frac{3}{4}$  of its depth?
  
4. A solid cube has a side length of 11 cm. A cylindrical section with a radius of 3 cm is removed from the cube. What is the total remaining volume of the cube?

Part H: Linear Relations

1. Answer the following questions using the graph to the right.

- a) Complete a table of values for the graph.

- b) Does the graph show a linear relation? Explain.
  - c) The graph shows that for every five units horizontally, you go \_\_\_ units vertically.
  - d) Would it be reasonable to include a point for 7 tickets? Explain.
  - e) Would it be reasonable to include a point for \$10.00? Explain.
  - f) What is the per ticket cost?
  - g) If the graph continued, what would be the cost of 25 tickets?
2. a) Complete a table of values for the equation  $y = 4x - 1$ , using  $x = -2, -1, 0, 1,$  and  $2$ .
  
  - b) Graph the ordered pairs from 2a.

### Part I: Probability

- Two six-sided dice are rolled.
  - What is the probability that an even number is rolled on both dice?
  - What is the probability that the sum of the two numbers is greater than or equal to six?
- An online computer company has a sale in which customers choose one of four different computers and one of three different printers. How many computer-printer options are available?

### Math 8: Final Review Answers

#### Part A: Fractions

- a)  $\frac{3}{4}$       b)  $\frac{24}{7}$  or  $3\frac{3}{7}$       c)  $\frac{3}{8}$       d)  $\frac{4}{5}$
- a) 14      b) 32      c) 49      d) 6
- a)  $1\frac{8}{45}$       b)  $\frac{23}{28}$       c)  $1\frac{1}{20}$       d)  $\frac{19}{24}$
- e)  $6\frac{1}{2}$       f)  $1\frac{7}{15}$       g)  $2\frac{13}{30}$       h)  $2\frac{3}{4}$
- a)  $\frac{3}{4}$       b)  $8\frac{13}{24}$  cm
- a)  $\frac{10}{21}$       b)  $2\frac{1}{2}$       c)  $\frac{5}{9}$       d)  $\frac{8}{9}$       e) 9  
f)  $1\frac{19}{20}$       g)  $\frac{1}{9}$       h)  $12\frac{1}{2}$       i)  $1\frac{9}{35}$       j)  $2\frac{2}{3}$
- a) \$58      b)  $1\frac{5}{16}$  litres      c)  $\frac{1}{3}$       d)  $1\frac{2}{5}$       e)  $\frac{5}{7}$       f) 8 m

#### Part B: Integers

- a) -4    b) -10    c) 2    d) -10    e) -3    f) 17    g) -5    h) -4    i) 18    j) -82    k) -1
- a) -8    b) 20    c) -120    d) 18    e) -3    f) 7    g) 18    h) 11
- a) 5    b) 39    c) 75    d) 4    e) -2    f) 5
- a)  $291^{\circ}\text{C}$     b)  $-12^{\circ}\text{C}$     c) 186 L    d) a) -4    b) -4    c) -23    d) -3

#### Part C: Proportion

- a) 30      b) 9      c) 52.5      d) 3, 45      e) 4.25, 10
- a) 72 000      b) 1200      c)  $12\frac{1}{2}$       d) 15
- 289.9 km      4. 70 Points      5. 73.5 cm      6. B      7. 84 m
- \$3.43      9. 608 km      10. 6 h and 40 min      11. \$2160 and \$3600
- a) 12    b)  $\frac{5}{8}$  or 62.5%    c) 5:3      13. 10.63, 9.72, 10.62 L/100km; Vehicle 2

#### Part D: Percent

- a) 80%, 0.8      b)  $\frac{1}{5}$ , 0.2      c) 75%,  $\frac{3}{4}$       d) 57.14%, 0.5714...
- e)  $\frac{607}{10000}$ , 0.0607      f)  $33\frac{1}{3}\%$ ,  $\frac{1}{3}$       g)  $216\frac{2}{3}\%$ , 2.166...      h) 3, 3
- i) 0.2%,  $\frac{1}{500}$       j)  $\frac{3}{400}$ , 0.0075
- a) 15      b) 21      c) 28      d) 20%
- e) 20%      f) 0.2      g) 8400      h) 43.2    i)  $133\frac{1}{3}$
- j) 64.3
- $62\frac{2}{3}\%$       4. \$6      5. 580 students      6. 18.75 %
- 192 questions      8. \$37.50 discount      9. \$60 regular price
- 11.11%      11. \$900      12. \$80.25      13. \$13.54

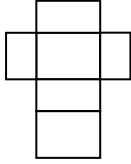
#### Part E: Powers

- a) 64      b) 169      c) 289      d) 6400
- a) 11      b) 30      c) 7      d) 16
- 121,144
- a) 37      b) 15      c) 5      5. 3.75 m      6. 17 cm      7. 25 m

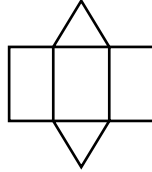
Part F: Algebraic Equations

1. a)  $12b - 3$       c)  $-3$       d)  $-9$       e)  $6$       f)  $21$   
 g)  $-36$       h)  $3$       i)  $-7$       j)  $6$       k)  $-9$   
 l)  $56$       m)  $27$       n)  $4$       o)  $5$       p)  $9$
2.  $10 = \frac{1}{3}x - 3 ; 39$       3.  $40(x + 2) = 960 ; \$22/h$

Part G: Measurement

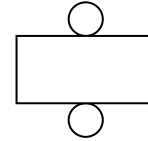


1. a)  
 b)  $45.12 \text{ cm}^2$   
 c)  $18.9 \text{ cm}^3$   
 2.  $V = 343 \text{ m}^3$   
 3.  $0.96 \text{ m}^3$   
 4.  $102 \text{ cm}^3$



- d)  
 e)  $342 \text{ cm}^2$   
 f)  $324 \text{ cm}^3$

$SA = 294 \text{ m}^2$



- g)  
 h)  $791.28 \text{ cm}^2$   
 i)  $1695.6 \text{ cm}^3$

Part H: Linear Relations

1. a)

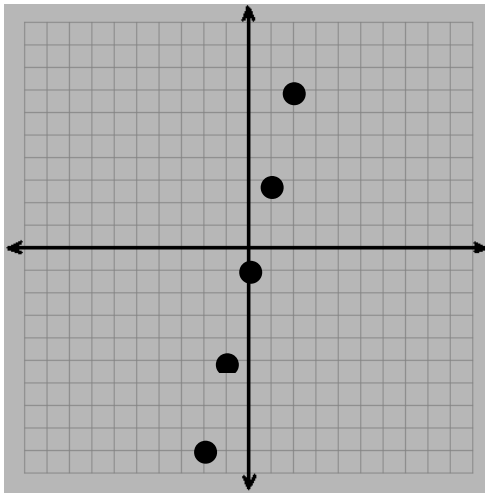
# of Tickets	5	10	15	20
Cost (\$)	7.5	15	22.5	30

- a) Yes, it appears that the dots form a straight line.  
 b)  $7.5$       e) Yes, you could have 7 tickets, they would cost  $\$10.50$ .  
 c) No,  $\$10$  would give you  $6\frac{2}{3}$  tickets, which does not make sense.  
 d)  $\$1.50$       g)  $\$37.50$

2. a)

x	-2	-1	0	1	2
y	-9	-5	-1	3	7

b)



Part I: Probability

1. a)  $\frac{1}{4}$     b)  $\frac{3}{8}$   
 2. 12 options