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## Unit 8  Patterns and Algebra: Variables, Expressions, and Equations

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## Unit 9  Number Sense: Fractions

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**Introduction to Quizzes and Tests**

We provide a quiz for, on average, every four lessons and a test covering the material of two to three quizzes, with one or two tests per unit. Students should need no more than 10 minutes to complete a quiz and no more than 45 minutes to complete a test.

Quizzes cover material both from lessons that are required to cover the curriculum and lessons labelled as recommended, while tests only cover material from lessons that are required to cover the curriculum.

Quizzes can be used as confidence builders and as formative assessment tools. A quiz should be administered after the last lesson that it covers has been taught. Tests are intended to be used as summative assessment tools. We recommend allowing students time to receive and internalize the feedback from all relevant quizzes before administering the test. The introduction to each unit in the Teacher Resource identifies which lessons are covered by each quiz and test.
Unit 8: Patterns and Algebra

Quiz (Lessons 8–12) — AB

1. Calculate the numerical expression.
   a) \((2 + 3) \times 4 =\) 
   b) \(2 + (3 \times 4) =\) 
   c) \(8 \div (6 - 2) =\)

2. Solve the equation by guessing and checking.
   a) \(4 + \square = 11\) 
   b) \(\square - 7 = 6\) 
   BONUS ▶ \(32 - \square = 17\)

3. Solve the equation by writing the unknown by itself.
   a) \(4 \times \square = 12\) 
   b) \(\square - 8 = 9\) 
   BONUS ▶ \(26 \div \square = 2\)

4. Write the mathematical expressions in words.
   a) \((5 + 3) \times 4\) 
   b) \(2 + (7 \times 3)\) 
   c) \(9 \div (4 + 2)\)

5. Replace the variable with the given number and evaluate.
   a) \((n + 4) \times 2, \quad n = 3\) 
   b) \(3 + (t \times 2), \quad t = 4\) 
   c) \(6 \div (w - 5), \quad w = 8\)

6. Circle the part that is larger. Write the difference two ways to make an equation. Then solve the equation.
   a) 8 games 
   6 books 
   x fewer books than games
   b) \(x\) pens 
   3 more pencils than pens 
   5 pencils
   c) 7 apples 
   4 fewer oranges than apples 
   x oranges
Unit 8: Patterns and Algebra

Quiz (Lessons 8–12) — AB

1. a) 20
   b) 14
   c) 2

2. a) 7
   b) 13
   **BONUS**
      15

3. a) \( \square = 12 + 4 \)
    \( \square = 3 \)
   b) \( \square = 9 + 8 \)
    \( \square = 17 \)
   **BONUS**
    \( \square = 26 + 2, \square = 13 \)

4. a) Add 5 and 3. Then multiply by 4.
   b) 2 more than the product of 7 and 3.
   c) 9 divided by the sum of 4 and 2.

5. a) \((3 + 4) \times 2\)
    = \(7 \times 2\)
    = 14
   b) \(3 + (4 \times 2)\)
    = \(3 + 8\)
    = 11
   c) \(6 \div (8 - 5)\)
    = \(6 \div 3\)
    = 2

6. a) circle games
    \(8 - 6 = x\)
    \(x = 2\)
   b) circle pencils
    \(5 - 3 = x\)
    \(x = 2\)
   c) circle apples
    \(7 - 4 = x\)
    \(x = 3\)
Unit 8: Patterns and Algebra

Quiz (Lessons 13–16) — AB

1. Write the parts and how much each part costs. The write and solve an equation.
   A pen costs $9 and a pencil is $5 cheaper than the pen.
   a) How much does the pencil cost?

   b) How much do the pen and pencil cost altogether?

2. Write an equation to solve the problem.
   Ella read 23 pages on Monday. She read 6 pages in the morning.
   How many pages did she read in the afternoon?

3. Sara is 4 times as old as her brother. Sara is 6 years older than her brother. Finish the model to find out how old Sara is.

4. Draw a model for the story. Then solve the problem.
   There are 42 people on a school bus.
   There are five times as many children as there are adults.
   How many children and how many adults are on the bus?

5. Write an equation to solve the problem.
   Amit is twice as old as John. Clara is 3 years older than John. John is 11 years old.
   a) How old is Amit?

   b) How old is Clara?

BONUS► Phil collects quarters, dimes, and nickels. He has 40 coins in his collection.
   He has 18 quarters and 15 dimes. How many more dimes than nickels does Phil have?
Unit 8: Patterns and Algebra

Quiz (Lessons 13–16) — AB

1. a) pen: $9
   pencil: $x
   difference: $5
   $9 - 5 = x
   x = 4
   The pencil costs $4.

   b) pen: $9
   pencil: x
   total: x
   x = 9 + 4
   x = 13
   The pen and pencil cost $13 altogether.

2. $x = 23 - 6$
   $x = 17$
   Ella read 17 pages in the afternoon.

3. Teacher to check diagram.
   Sara is 8 years old.

4. Teacher to check diagram.
   There are 35 children and 7 adults on the bus.

5. a) $a = 2 \times 11$
   $a = 22$
   Amit is 22 years old.

   b) $c = 11 + 3$
   $c = 14$
   Clara is 14 years old.

BONUS

$n + 15 + 18 = 40$
$n = 7$
$15 - 7 = 8$
Phil has 8 more dimes than nickels.
1. Solve the equation.
   a) \( w + 7 = 26 \)
   b) \( b \times 3 = 27 \)

   \[ w = \underline{29} \quad b = \underline{9} \]

2. Write an equation that tells you the relationship between the numbers in Column A and Column B.

   a) \[
   \begin{array}{|c|c|}
   \hline
   A & B \\
   \hline
   1 & 7 \\
   2 & 14 \\
   3 & 21 \\
   \hline
   \end{array}
   \]

   b) \[
   \begin{array}{|c|c|}
   \hline
   A & B \\
   \hline
   1 & 9 \\
   2 & 10 \\
   3 & 11 \\
   \hline
   \end{array}
   \]

3. Let \( b \) stand for the number of apples in each bag. Write an equation to find \( b \).

   a) 19 apples in total
   
   \[
   \begin{array}{c}
   \text{Equation: } b \times \frac{19}{3} \\
   \text{ apples in each bag}
   \end{array}
   \]

   b) 15 apples in total
   
   \[
   \begin{array}{c}
   \text{Equation: } b \times \frac{15}{3} \\
   \text{ apples in each bag}
   \end{array}
   \]

4. Write the mathematical expressions in words.

   a) \( (3 + 1) \times 5 \)
   
   \[
   \text{Expression: } \frac{(3 + 1) \times 5}{3}
   \]

   b) \( 13 - 4 \times 3 \)
   
   \[
   \text{Expression: } \frac{13 - 4 \times 3}{3}
   \]

5. Replace the variable with the given number, then evaluate.

   a) \( 2h - 5, \ h = 3 \)
   b) \( 3x + 7, \ x = 6 \)
   c) \( 9 - 4n, \ n = 2 \)

   \[ a) 2(3) - 5 = 1 \quad b) 3(6) + 7 = 25 \quad c) 9 - 4(2) = 1 \]

BONUS ► Anna wants to buy a new MP3-player that costs $35. Anna has already saved $7.
   Anna decides to save equal amounts of money each month for the next four months. Write an expression to show the amount of money that she has to save each month.
6. Write and solve the equation for the problem.

There are 14 red cars. There are 7 fewer red cars than blue cars. How many blue cars are there?

7. What is the size of each block?

a)  

7  

35  

b)  

26

8. Megan is 3 times as old as her brother. Megan is 8 years older than her brother. Finish the model to find out how old Megan is.

9. An apple slicer cuts apples into 6 equal pieces. There are 4 apples and 8 people sharing the apples. Each person gets the same number of pieces. How many pieces of apple does each person get?

10. There are twice as many orange pens as red pens. There are 8 more black pens than red pens. There are 4 red pens. How many pens are there altogether?

BONUS ▶ Amy is arranging floor tiles. She uses 6 red tiles. There are 10 fewer red tiles than blue tiles and twice as many white tiles as the sum of red and blue tiles.

a) How many tiles of each colour does Amy use?

b) How many tiles does she use in total?
1. a) \( w = 15 \)
   b) \( b = 15 \)

2. a) \( B = 3A \)
   a) \( B = A + 8 \)

3. a) \( 3b + 1 = 19 \)
   \( b = 6 \)
   b) \( 3b + 3 = 15 \)
   \( b = 4 \)

4. a) five times the sum of three and one
   b) thirteen minus the product of 4 and 3

5. a) \( 2(3) - 5 \)
   \( = 6 - 5 \)
   \( = 1 \)
   
   b) \( 3(6) + 7 \)
   \( = 18 + 7 \)
   \( = 25 \)
   c) \( 9 - 4(2) \)
   \( = 9 - 8 \)
   \( = 1 \)

BONUS
(35 − 7) + 4

6. \( b - 14 = 7 \)
   \( b = 14 + 7 \)
   \( b = 21 \)

7. a) 7
   b) 13

8. In the diagram, the bracket represents 8, and each block represents 4.
   Megan is 8 years old.

9. \( 4 \times 6 = 24 \)
   \( 24 \div 8 = 3 \)
   Each person gets 3 pieces.

10. \( r = 4 \)
    \( b = 4 + 8 = 12 \)
    \( o = 2 \times 4 = 8 \)
    \( 4 + 12 + 8 \)
    \( = 24 \) pens altogether

BONUS
a) \( r = 6 \)
   \( b = 6 + 10 = 16 \)
   \( r + b = 22 \)
   \( w = 22 \times 2 = 44 \)

b) \( 6 + 16 + 44 \)
   \( = 66 \) tiles in total
1. Using a ruler, complete the figure to make a whole.
   a) \[
   \begin{array}{c}
   \hline
   \frac{2}{5} \\
   \hline
   \end{array}
   \]
   b) \[
   \begin{array}{c}
   \hline
   \frac{3}{4} \\
   \hline
   \end{array}
   \]

2. Complete the sentences.
   a) \[
   \begin{array}{c}
   \text{ } \\
   \text{ } \\
   \text{ } \\
   \text{ } \\
   \text{ } \\
   \end{array}
   \]
   b) \[
   \begin{array}{c}
   \text{ } \\
   \text{ } \\
   \text{ } \\
   \text{ } \\
   \text{ } \\
   \end{array}
   \]
   of the shapes are shaded.
   of the shapes are squares.
   of the shapes are rectangles.
   of the shapes are not triangles.

BONUS ► Shade the strips to show that Kyle finished \(\frac{1}{2}\) of the homework questions, Zara finished \(\frac{3}{4}\) of the questions, and Nina finished \(\frac{12}{28}\) of the questions. Who finished the most questions? Order the fractions from greatest to least in the blanks below.

   Kyle: 
   Zara: 
   Nina: 

   \[
   \begin{array}{c}
   > \\
   > \\
   \end{array}
   \]

3. Use the number line to order the fractions from least to greatest. Draw an \(\times\) to mark the position of each fraction.

   \[
   \begin{array}{c}
   0 \\
   1 \\
   2 \\
   3 \\
   4 \\
   5 \\
   6 \\
   7 \\
   8 \\
   9 \\
   9 \\
   \end{array}
   \]

   \[
   \begin{array}{c}
   \frac{5}{9} \\
   \frac{3}{9} \\
   \frac{7}{9} \\
   \frac{2}{9} \\
   \frac{9}{9} \\
   \frac{1}{9} \\
   \end{array}
   \]

   \[
   \begin{array}{c}
   < \\
   < \\
   < \\
   < \\
   < \\
   < \\
   \end{array}
   \]
Unit 9: Number Sense

Quiz (Lessons 34–37) — AB

1. Teacher to check.

2. a) \[
\begin{array}{c}
2 \\
5 \\
2 \\
5
\end{array}
\]

b) \[
\begin{array}{c}
3 \\
7 \\
5 \\
7
\end{array}
\]

BONUS

Zara finished the most questions.

\[
\frac{3}{4} > \frac{1}{2} > \frac{12}{28}
\]

3. \[
\begin{array}{cccccc}
1 & 2 & 3 & 5 & 7 & 9 \\
\frac{9}{9} & \frac{9}{9} & \frac{9}{9} & \frac{9}{9} & \frac{9}{9} & \frac{9}{9}
\end{array}
\]
1. Circle the greater fraction.
   a) $\frac{5}{6}$ or $\frac{5}{9}$   b) $\frac{7}{10}$ or $\frac{9}{10}$   c) $\frac{8}{11}$ or $\frac{6}{11}$   d) $\frac{12}{15}$ or $\frac{12}{14}$

2. Write any number in the blank that makes the relationship correct.
   a) $\frac{4}{9} < \frac{9}{9}$   b) $\frac{345}{347} > \frac{345}{347}$   c) $\frac{3}{422} > \frac{422}{422}$   BONUS $\frac{999}{1000} < \frac{999}{1000}$

3. Order the fractions from least to greatest by considering the numerators and denominators.
   a) $\frac{1}{6} \quad \frac{1}{10} \quad \frac{1}{9} \quad \frac{1}{11}$
   b) $\frac{3}{16} \quad \frac{3}{20} \quad \frac{3}{5} \quad \frac{3}{31}$

4. Draw lines to cut the whole cake into more equal pieces. Fill in the numerators of the equivalent fractions.
   4 pieces 8 pieces 16 pieces

5. Use multiplication to find the equivalent fraction.
   a) $\frac{2 \times 10}{5 \times 10} = \frac{20}{50}$   b) $\frac{3}{4} = \frac{28}{28}$   c) $\frac{7 \times 81}{9 \times 81} = \frac{663}{729}$

6. Turn the fractions into fractions with the same denominator. Then compare the fractions. Show your answer using < or >.
   a) $\frac{2 \times \frac{3}{7}}{5 \times \frac{3}{7}} \times \frac{3}{7} \times \frac{3}{7} = \frac{6}{7} \times \frac{3}{7} = \frac{18}{49}$
   b) $\frac{4}{9} \times \frac{3}{5} \times \frac{3}{5} = \frac{12}{15} \times \frac{3}{5} = \frac{36}{75}$
   c) $\frac{3}{4} \times \frac{5}{9} \times \frac{5}{9} = \frac{15}{36} \times \frac{5}{9} = \frac{75}{324}$

   so $\frac{2}{5} \quad \frac{3}{7} \quad \frac{4}{9} \quad \frac{3}{5} \quad \frac{3}{4} \quad \frac{5}{9}$
Unit 9: Number Sense

Quiz (Lessons 38–40) — AB

1. a) \( \frac{5}{6} \)
   b) \( \frac{9}{10} \)
   c) \( \frac{8}{11} \)
   d) \( \frac{12}{14} \)

2. a) any number larger than 4
   b) any number larger than 345
   c) any number less than 3

BONUS
   any number less than 1000

3. a) \( \frac{1}{11} \cdot \frac{1}{10} \cdot \frac{1}{9} \cdot \frac{1}{8} \cdot \frac{1}{7} \)
   b) \( \frac{3}{31} \cdot \frac{3}{20} \cdot \frac{3}{16} \cdot \frac{3}{5} \cdot \frac{3}{4} \)

4. Teacher to check drawings.
   2, 4, 8

5. a) \( \times 2, \times 2, 5 \)
   b) \( \times 7, \times 7, 21 \)
   c) \( \times 9, \times 9, 63 \)

6. a) multiply by 7
   \( \frac{14}{35} \)
   multiply by 5
   \( \frac{15}{35} \)
   <

b) multiply by 5
   \( \frac{20}{45} \)
   multiply by 9
   \( \frac{27}{45} \)
   <

c) multiply by 9
   \( \frac{27}{36} \)
   multiply by 4
   \( \frac{20}{36} \)
   >
1. Describe the set of letters in at least three ways using the fraction $\frac{4}{8}$.

   C a N A d i a N

2. Write four equivalent fractions for the amount shaded in the picture.

   $\boxed{} = \boxed{} = \boxed{} = \boxed{}$

**BONUS**
Carl walked $\frac{10}{110}$ kilometres in one minute. Blanca walked $\frac{10}{120}$ kilometres in one minute.

Unit 9: Number Sense

Quiz (Lesson 44) — AB

1. Sample answer:
   \[
   \frac{4}{8} \text{ of the letters are uppercase.}
   \]
   \[
   \frac{4}{8} \text{ of the letters are vowels.}
   \]
   \[
   \frac{4}{8} \text{ of the letters are consonants.}
   \]

2. \[
\begin{array}{cccc}
1 & 2 & 4 & 8 \\
2 & 4 & 8 & 16
\end{array}
\]

BONUS

The denominator of the first fraction is smaller, so
\[
\frac{10}{110} > \frac{10}{120}
\]
So Carl walked farther and faster.
1. Complete the sentence.
   
   ![Shapes Image]

   a) _____ of the shapes are shaded.
   b) _____ of the shapes are squares.
   c) _____ of the shapes are rectangles.
   d) _____ of the shapes are not triangles.

2. Use the number line to order the fractions from least to greatest.  
   Draw an X to mark the position of each fraction.

   ![Number Line Image]

   \[
   \frac{3}{12} < \frac{1}{12} < \frac{9}{12} < \frac{4}{12} < \frac{11}{12} < \frac{7}{12}
   \]

3. Use each fraction twice to describe the set of shapes: \(\frac{1}{9}, \frac{4}{9}, \frac{5}{9}\).

   ![Shapes Image]

4. What fraction of the letters in the word “Saskatchewan” are …

   a) vowels?  
   b) consonants?
5. Use multiplication to find the equivalent fraction.
   a) \( \frac{3 \times 5}{8} = \frac{20}{40} \)  
   b) \( \frac{5 \times 5}{8} = \frac{45}{48} \)  
   c) \( \frac{8 \times 11}{9} = \frac{99}{99} \)

6. Explain why each picture does (or does not) show \( \frac{2}{5} \).
   a)
   b)
   c)

7. Circle the greater fraction.
   a) \( \frac{8}{10} \) or \( \frac{7}{10} \)  
   b) \( \frac{7}{9} \) or \( \frac{7}{8} \)  
   c) \( \frac{16}{25} \) or \( \frac{21}{25} \)  
   d) \( \frac{20}{25} \) or \( \frac{20}{23} \)

8. Order the fractions from least to greatest by considering the numerators and denominators.
   a) \( \frac{2}{7} \) or \( \frac{2}{15} \)  
   \( \frac{2}{13} \) or \( \frac{2}{20} \)  
   \( \frac{2}{10} \) or \( \frac{2}{7} \)

   b) \( \frac{7}{14} \) or \( \frac{7}{11} \)  
   \( \frac{7}{18} \) or \( \frac{7}{9} \)  
   \( \frac{7}{20} \) or \( \frac{7}{11} \)

9. Turn the fractions into fractions with the same denominator. Then compare the fractions. Show your answer using < or >.
   a) \( \times \frac{7}{8} \times \frac{4}{5} \times \)
   b) \( \times \frac{4}{7} \times \frac{7}{9} \times \)
   c) \( \times \frac{8}{9} \times \frac{6}{8} \times \)

   = _____  = _____  = _____  = _____  = _____

   so \( \frac{7}{8} \) \( \frac{4}{5} \)  
   so \( \frac{4}{7} \) \( \frac{7}{9} \)  
   so \( \frac{8}{9} \) \( \frac{6}{8} \)
Unit 9: Number Sense

Test (Lessons 34–40, 44) — AB

1. a) \(\frac{6}{11}\)
   b) \(\frac{3}{11}\)
   c) \(\frac{5}{11}\)
   d) \(\frac{8}{11}\)

2. \(\frac{1}{12}, \frac{3}{12}, \frac{4}{12}, \frac{7}{12}, \frac{9}{12}, \frac{12}{12}\)

3. Answers will vary.
   Sample answers:
   - \(\frac{1}{9}\) unshaded circles,
   - \(\frac{1}{9}\) shaded triangles,
   - \(\frac{4}{9}\) unshaded shapes,
   - \(\frac{4}{9}\) circles,
   - \(\frac{5}{9}\) shaded shapes,
   - \(\frac{5}{9}\) polygons

4. a) \(\frac{4}{12}\) or \(\frac{1}{3}\)
   b) \(\frac{8}{12}\) or \(\frac{2}{3}\)

5. a) \(\times 4, \times 4, 12\)
   b) \(\times 6, \times 6, 30\)
   c) \(\times 9, \times 9, 72\)

6. a) yes, because 2 equal parts out of 5 are shaded
   b) no, because there are 6 equal parts
   c) no, because the parts are not equal

   **BONUS**
   - yes, because 2 equal parts out of 5 are shaded

7. Circle the following:
   a) \(\frac{8}{10}\)

8. a) \(\frac{2}{20}, \frac{2}{10}, \frac{2}{15}, \frac{2}{13}\)
   b) \(\frac{7}{20}, \frac{7}{18}, \frac{7}{14}, \frac{7}{11}\)

9. a) multiply by 5
   - \(\frac{35}{40}\)
   - multiply by 8
   - \(\frac{32}{40}\)
   - >
   b) multiply by 9
   - \(\frac{36}{63}\)
   - multiply by 7
   - \(\frac{49}{63}\)
   - <
   c) multiply by 8
   - \(\frac{64}{72}\)
   - multiply by 9
   - \(\frac{54}{72}\)
   - >
1. Write a fraction for the shaded part of the hundreds block. Then write the fraction as a decimal. Hint: Count by 10s for each column or row that is shaded.

a)  

b) 

BONUS ►  

2. Write the fraction as a decimal with 2 digits after the decimal point.

a) \( \frac{39}{100} = 0.\underline{39} \)  
b) \( \frac{4}{100} = 0.\underline{04} \)

c) \( \frac{8}{10} = 0.\underline{80} \)  
d) \( \frac{4}{10} = 0.\underline{40} \)

3. Cross out the equalities that are incorrect.

\[
\frac{47}{100} = 0.47 \quad \frac{9}{100} = 0.9 \quad 0.05 = \frac{5}{10} \quad 0.60 = \frac{6}{10}
\]

4. Fill in the blanks.

a) 53 hundredths = _____ tenths + _____ hundredths

b) 7 hundredths = _____ tenths + _____ hundredths

5. Estimate and mark the location of the decimals on the number line.

A. 0.83  B. 0.26  C. 0.95  D. 0.54  E. 0.79

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
1. a) \( \frac{18}{100} = 0.18 \)
   
   b) \( \frac{71}{100} = 0.71 \)
   
   **BONUS**
   
   \( \frac{91}{100} = 0.91 \)

2. a) 0.39
   
   b) 0.04
   
   c) 0.8
   
   d) 0.4

   0.80
   
   0.40

3. Cross out \( \frac{9}{100} = 0.9 \) and
   
   \( 0.05 = \frac{5}{10} \).

4. a) 5, 3
   
   b) 0, 7

5. Teacher to check.
1. Write the place value of the underlined digit.
   a) 35.8   ____________ b) 17.4   ____________ c) 950.81   ____________
   d) 0.7   ____________ e) 108.35   ____________ f) 71.92   ____________

2. Put a decimal point in the number so that the digit 7 has the value $\frac{7}{10}$.
   a) 5 9 7 0   b) 3 5 6 7   c) 2 7   d) 6 7 9

3. Write the fraction as a decimal with three digits after the decimal point.
   a) $\frac{345}{1000} = \ __\cdot\ __\cdot\ __\cdot\ __\cdot$  
b) $\frac{807}{1000} = \ __\cdot\ __\cdot\ __\cdot\ __\cdot$  
c) $\frac{52}{1000} = \ __\cdot\ __\cdot\ __\cdot\ __\cdot$
   d) $\frac{9}{10} = \ __\cdot\ __\cdot\ __\cdot$  
e) $\frac{87}{100} = \ __\cdot\ __\cdot\ __\cdot$  
f) $\frac{5}{100} = \ __\cdot\ __\cdot\ __\cdot$

4. Write the decimal as a fraction with denominator 1000.
   a) 0.456 = $\frac{456}{1000}$  
b) 0.097 = $\frac{97}{1000}$  
c) 0.4 = $\frac{400}{1000}$  
d) 0.108 = $\frac{108}{1000}$

5. Mark the decimal or fraction on the number line with a dot and a letter.

6. Change all decimals to fractions with the denominator 100. Write the fractions in order from greatest to least.
   a) 0.42 0.5 0.4  
   b) 0.08 $\frac{74}{100}$ 0.80
Unit 10: Number Sense
Quiz (Lessons 50–52) — AB

1. a) tens  
   b) tenths  
   c) hundreds  
   d) ones  
   e) hundredths  
   f) tenths  
2. a) 59.70  
   b) 356.7  
   c) 2.7  
   d) 6.79  
3. a) 0.345  
   b) 0.807  
   c) 0.052  
   d) 0.900  
   e) 0.870  
   f) 0.005  
4. a) 456  
   b) 97  
   c) 400  
   d) 108  
5. Teacher to check.  
6. a)  
   \[
   \begin{array}{ccc}
   42 & 50 & 40 \\
   100 & 100 & 100 \\
   50 & 42 & 40 \\
   100 & 100 & 100 \\
   \end{array}
   \]
   b)  
   \[
   \begin{array}{ccc}
   8 & 74 & 80 \\
   100 & 100 & 100 \\
   80 & 74 & 8 \\
   100 & 100 & 100 \\
   \end{array}
   \]
1. Write equivalent fractions.

   a) \( \frac{1}{5} = \frac{10}{100} = \frac{10}{100} 
   
   b) \( \frac{3}{5} = \frac{10}{10} = \frac{10}{100} 
   
   c) \( \frac{4}{5} = \frac{10}{10} = \frac{10}{100} 

2. Circle the greater number in the pair. Hint: First change all fractions and decimals to fractions with denominator 100.

   a) 0.37 \( \frac{2}{5} \)  
   b) \( \frac{1}{2} \) 0.49  
   c) \( \frac{4}{5} \) 0.81

3. Regroup so that each place value has a single digit.

   a) 5 ones + 14 tenths = _____ ones + _____ tenths
   
   b) 3 tenths + 17 hundredths = _____ tenths + _____ hundredths
   
   c) 0 tenths + 19 hundredths = _____ tenth + _____ hundredths

4. Add the decimals by lining up the decimal points. You may need to regroup.

   a) 0.8 + 0.64  
   b) 1.27 + 3.45  
   BONUS \( 1.46 + 0.38 + 2.51 \)

5. Subtract the decimals on the grid.

   a) 0.75 − 0.34  
   b) 6.23 − 3.15  
   c) 3.46 − 0.52
Unit 10: Number Sense

Quiz (Lessons 53–55) — AB

1. a) 2, 20  
b) 6, 60  
c) 8, 80

2. a) Circle \( \frac{2}{5} \)  
    \[ \frac{37}{100}, \frac{40}{100} \]
 b) Circle \( \frac{1}{2} \)  
    \[ \frac{50}{100}, \frac{49}{100} \]
 c) Circle 0.81,  
    \[ \frac{80}{100}, \frac{81}{100} \]

3. a) 6, 4  
b) 4, 7  
c) 1, 9

4. a) 1.44  
b) 4.72

BONUS

4.35

5. a) 0.41  
b) 3.08  
c) 2.94
1. Mark the decimal or fraction on the number line with a dot and a letter.

A. 0.83  B. 0.19  C. 0.02  D. $\frac{73}{100}$  E. $\frac{6}{100}$  F. $\frac{9}{10}$

2. Write the decimals as hundredths to compare the decimals. Then write < or > in the box.

a) 0.6  0.58  b) 0.06  0.60  c) 0.81  0.9

3. Estimate and mark the location of the decimals on the number line.

A. 0.92  B. 0.07  C. 0.30  D. 0.41  E. 0.84

4. Write the place value of the underlined digit.

a) 432.8  _________  b) 17.04  _________  c) 9.81  _________

d) 601.73  _________  e) 108.55  _________  f) 71.49  _________

5. Write the decimal as a fraction with denominator 1000.

a) $0.631 = \frac{631}{1000}$  b) $0.43 = \frac{43}{1000}$  c) $0.004 = \frac{4}{1000}$  d) $0.01 = \frac{1}{100}$
6. Vicky thinks $\frac{40}{100}$ is greater than 0.4 because 40 is greater than 4. Do you agree? Explain.

7. Write the numbers in order from least to greatest. Explain how you found your answer.

0.28  $\frac{3}{4}$  0.7  $\frac{3}{5}$  $\frac{1}{2}$

8. Add the decimals by lining up the decimal points. You may need to regroup.

a) 5.72 + 0.26  b) 0.7 + 3.45  BONUS $2.55 + 0.43 + 3.64$

9. Tony made a fruit drink by mixing 0.48 L of juice with 0.63 L of ginger ale. How many more litres of ginger ale than juice did he use?
1. Teacher to check.

2. a) \[
\frac{60}{100} > \frac{58}{100}
\]
   \[0.6 > 0.58\]
   b) \[
\frac{6}{100} < \frac{60}{100}
\]
   \[0.06 < 0.60\]
   c) \[
\frac{81}{100} < \frac{90}{100}
\]
   \[0.81 < 0.9\]

3. Teacher to check.

4. a) tens
   b) hundredths
   c) ones
   d) hundreds
   e) tenths
   f) hundredths

5. a) 631
   b) 430
   c) 4
   d) 10

6. I do not agree with Vicky.
   \[
   \frac{40}{100} = 0.4
   \]

7. \[
0.28 < \frac{1}{2} < \frac{3}{5} < 0.7 < \frac{3}{4}
\]
   Sample explanation:
   I wrote all the numbers as fractions with denominator 100:
   \[
   0.28 = \frac{28}{100} = \frac{3}{4} = \frac{75}{100},
   \]
   \[
0.7 = \frac{70}{100} = \frac{3}{4} = \frac{60}{100},
\]

8. a) 5.98
   b) 4.15
   c) 6.62

9. \[
0.63 - 0.48 = 0.15 L
\]
   Tony used 0.15 L more ginger ale than juice.
Unit 11: Number Sense

Quiz (Lessons 56–58) — AB

Name: ______________________  Date: _______________

1. Write the amount in cent notation.
   a) $8.00 = _______  
b) $0.39 = _______  
c) $3.07 = _______

2. Write the amount in dollar notation.
   a) 547¢ = _______  
b) 9¢ = _______  
c) 1301¢ = _______

3. Write the amount in cent notation and then in dollar notation.
   a) 7 nickels = _______ = _______
   b) 4 quarters = _______ = _______
   c) 11 dimes = _______ = _______
   **BONUS** 5 toonies, 2 loonies, 3 quarters, and 1 dime = _______ = _______

4. Add or subtract. You will have to regroup.
   a) $15.03 − $12.95  
b) $32.16 + $24.85  
c) $90.00 − $82.50

5. Lynn has $45. If she buys a sweater for $24.50 and a book for $10.20, will she have enough money to buy another book for $10.35?

6. Round to the nearest whole number.
   a) 2.3 ______  
b) 5.7 ______  
c) 9.5 ______

7. Round to the nearest tenth. Underline the tenths digit first. Then put your pencil on the digit to the right (the hundredths digit). This digit tells you whether to round up or down.
   a) 6.43 ______  
b) 7.86 ______  
c) 3.15 ______
Unit 11: Number Sense

Quiz (Lessons 56–58) — AB

1. a) 800¢
   b) 39¢
   c) 307¢
2. a) $5.47
   b) $0.09
   c) $13.01
3. a) 35¢, $0.35
   b) 100¢, $1.00
   c) 110¢, $1.10

   **BONUS**
   1285¢, $12.85
4. a) $2.08
   b) $57.01
   c) $7.50
5. No. The sweater and the first book cost $24.50 + $10.20 = $34.70 altogether. Lynn will have $45 - $34.70 = $10.30 left, so she does not have enough to buy the other book.
6. a) 2
   b) 6
   c) 10
7. Teacher to check underlining.
   a) 6.4
   b) 7.9
   c) 3.2
1. Estimate by rounding to the nearest tenth. Then add or subtract.
   a) \(0.81 + 1.07 \approx \) ______________________
   b) \(5.79 - 1.42 \approx \) ______________________

   **BONUS ►** \(999.96 - 9.99 \approx \) ______________________

2. Multiply by 10 by shifting the decimal point one place to the right.
   a) \(10 \times 4.6 = \) _____
   b) \(8.9 \times 10 = \) _____
   c) \(95.3 \times 10 = \) _____

3. Multiply by 100. Do your rough work in the grid.
   a) \(8.9 \times 100 = \) _____
   b) \(100 \times 0.06 = \) _____

4. Convert the measurement.
   a) \(3.06 \text{ km} \times \) ________ = ________ \(\text{ m} \)  
   b) \(0.51 \text{ m} \times \) ________ = ________ \(\text{ cm} \)

5. Estimate by rounding both numbers to the nearest tenth. Then use the grid to add or subtract.
   a) \(57.16 - 42.34 \)
   b) \(108.01 + 58.85 \)
Unit 11: Number Sense

Quiz (Lessons 59, 60, 62) — AB

1. a) 0.8 + 1.1 = 1.9
   b) 5.8 - 1.4 = 4.4

   **BONUS**
   1000 - 10 = 990

2. a) 46
   b) 89
   c) 953

3. a) 890
   b) 6

4. a) 1000, 3060
   b) 100, 51

5. a) 57.2 - 42.3 = 14.9
   b) 108.0 + 58.9 = 166.9
1. Write the amount in cent notation.
   a) $9.02 = _______  b) $0.18 = _______  c) $15.70 = _______

2. Write the amount in dollar notation.
   a) 607¢ = _______  b) 9¢ = _______  c) 1465¢ = _______

3. Write the amount in cent notation and then in dollar notation.
   a) 8 nickels = _____ = _____  b) 5 quarters = _____ = _____  c) 9 dimes = _____ = _____

4. Add or subtract. You will have to regroup.
   a) $65.31 − $42.15  b) $43.27 + $14.84  c) $80.00 − $29.59

5. Round to the nearest whole number.
   a) 8.2 ______  b) 15.6 ______  c) 29.5 ______

6. Estimate by rounding to the nearest tenth. Then add or subtract.
   a) 86.44 + 2.37 = _______________________
      b) 15.68 − 2.51 = _______________________

7. Estimate by rounding both numbers to the nearest tenth. Then use the grid to add or subtract.
   a) 48.63 + 27.29  ▶ BONUS ▶ 199.97 − 69.95
8. Emma wants to buy 2 children’s tickets and 1 adult ticket for a show. Children’s tickets cost $5.25 and adult tickets cost $10.25. She has $20. Does she have enough money?

   a) Estimate by rounding to the nearest whole number. Write “yes” or “no” in the blank.

   b) Calculate. Write “yes” or “no” in the blank.

   c) If you rounded to the nearest tenth instead of the whole number in part a), would you have said Emma has enough money to pay for the tickets? Explain.
Unit 11: Number Sense  
Test (Lessons 56–59, 62) — AB

1. a) 902¢  
   b) 18¢  
   c) 1570¢
2. a) $6.07  
   b) $0.09  
   c) $14.65
3. a) 40¢, $0.40  
   b) 125¢, $1.25  
   c) 90¢, $0.90
4. a) $23.16  
   b) $58.11  
   c) $50.41
5. a) 8  
   b) 16  
   c) 30
6. a) 86.4 + 2.4 = 88.8  
   b) 15.7 − 2.5 = 13.5
7. a) 48.6 + 27.3 = 75.9  

BONUS  
200.0 − 70.0 = 130.0
8. a) $5 + $5 + $10 = $20, yes  
   b) $5.25 + $5.25  
       + $10.25 = $20.75, no  
   c) No, because when rounded to the nearest tenth,  
       the tickets cost  
       $5.30 + $5.30 +  
       $10.30 = $20.90,  
       which is more than $20.
Unit 12: Geometry

Quiz (Lessons 14, 15) — AB

1. Translate the dot.
   a) 3 units left, 2 units up
   b) 5 units right, 3 units down

   ![Grid with dots moved](image)

2. Slide the shape 4 units right and 2 units down.

   ![Shape moved](image)

3. Is the dashed line a line of symmetry?
   a)  
   b)  
   c)  

   ![Shapes with dashed lines](image)

BONUS► Draw at least 5 lines of symmetry on the regular octagon.

   ![Regular octagon with dashed lines](image)
Unit 12: Geometry

Quiz (Lessons 14, 15) — AB

1. a) 
   ![Grid with three dots]

   b) 
   ![Grid with four dots]

2. 
   ![Grid with a shape]

3. a) no
   b) yes
   c) no

BONUS
Teacher to check for 5 of 8 lines shown below:
   ![A circle with directions]
Unit 12: Geometry

Quiz (Lessons 17–20) — AB

Name: ______________________

Date: ________________

1. Draw the reflections of the shape and points in the line.
   a) ![Reflection a)
   b) ![Reflection b)

2. a) Extend the pattern by reflecting the shape in vertical lines.
   ![Pattern extension]
   b) Draw the 12th shape in the pattern.
   ![Pattern 12th shape]

3. Draw the line of reflection or a translation arrow.
   a) ![Translation a]
   b) ![Translation b]
   BONUS ![Translation bonus]
Unit 12: Geometry

Quiz (Lessons 17–20) — AB

4. Write the fraction of a turn each arrow has moved from start to finish.
   a) \hspace{1cm} b) \hspace{1cm} c) 
   \begin{align*}
   \text{turn CCW} & \hspace{1cm} \text{turn CW} & \hspace{1cm} \text{_________________}
   \end{align*}

5. Show what the figure would look like after the given rotation around the dot. First rotate the dark line, then draw the rest of the figure.
   a) \hspace{1cm} b) 
   \begin{align*}
   \frac{1}{4} \text{ turn clockwise} & \hspace{1cm} \frac{1}{2} \text{ turn counter-clockwise}
   \end{align*}

6. Describe the transformation used to move the triangle from position 1 to position 2.
The sides of each square in the picture are 1 unit long.
   a) \hspace{1cm} b) \hspace{1cm} c) 
   \begin{align*}
   \hspace{1cm} \hspace{1cm} \hspace{1cm}
   \hspace{1cm} \hspace{1cm} \hspace{1cm}
   \hspace{1cm} \hspace{1cm} \hspace{1cm}
   \end{align*}
Unit 12: Geometry

Quiz (Lessons 17–20) — AB

1. a)
   \[ \text{Diagram} \]

   b)
   \[ \text{Diagram} \]

2. a)
   \[ \text{Diagram} \]

   b)
   \[ \text{Diagram} \]

3. a)
   \[ \text{Diagram} \]

   b)
   \[ \text{Diagram} \]

BONUS

4. a)
   \[ \frac{1}{4} \]

   b)
   \[ \frac{3}{4} \]

   c)
   \[ \frac{3}{4} \text{ turn CCW} \]

5. a)
   \[ \text{Diagram} \]

   b)
   \[ \text{Diagram} \]

6. a)
   reflection in line $M$

   b)
   rotation: \( \frac{1}{4} \) turn

   CCW around point $P$

   c)
   translation: 1 unit right
1. Slide the shape 5 units left and 2 units up.

2. Can the pair of shapes be created by a translation? If so, describe the translation. If not, explain why not.

   a) 
   b) 

   _______________________________      _____________________________
   _______________________________      _____________________________

3. Draw the reflection of the shape by first finding the reflections of its vertices.

   a) 
   b) 

   _______________________________      _____________________________
4. Jodi made a pattern by alternating between translating and reflecting a shape.
   a) Continue the pattern.

   ![Pattern Diagram]

   b) Draw the core of the pattern.

   c) Draw the 23rd shape in the pattern.

5. a) Draw the image after the given translation, reflection, or rotation.
   i) $\frac{1}{4}$ turn clockwise around point $P$
   ii) reflect in line $M$
   iii) slide 3 units right, 2 units down

   ![Translation Diagrams]

   b) Which way does the flag point now? Use N, E, S, W.
   i) The flag points _______.
   ii) The flag points _______.
   iii) The flag points _______.

6. Describe one transformation that moves the triangle from position 1 to position 2.
   a) 
   b)
1. 

2. a) Yes, move 4 units right, 2 units down. 
   b) No, because the shapes are not congruent. 

3. a) 
   b) 

BONUS 

4. a) Teacher to check. 
   b) 
   c) 

5. a) 
   i) 
   ii) 
   iii) 
   b) 
   i) S 
   ii) W 
   iii) E 

6. a) reflection in line 1 
   b) rotation: $\frac{1}{2}$ turn clockwise around point $P$ or rotation: $\frac{1}{2}$ turn counter-clockwise around point $P$. 
Unit 13: Geometry

Quiz (Lessons 21–24) — AB

1. Do the marked edges or faces intersect? Write “yes” or “no.” If they intersect, trace the edge or mark the vertex where they meet.

   a)     b)    c)    d)  
   ______  ______  ______  ______

   2. Cross out the objects that are not prisms. Shade the bases of the triangular prisms. Circle the rectangular prisms.

   a)  
   b)  
   c)  
   d)  

   3. Ali makes a 3-D shape. Any two faces in the shape intersect. Can the shape be a prism?

   4. Shade the base or bases. Then name the prism or pyramid.

   a)     b)    c)    d)  
   __________   __________   __________   __________

   BONUS► A pyramid has a 9-sided base.
   a) How many faces does the pyramid have? _________
   b) How many vertices does the pyramid have? _________
   c) How many edges does the pyramid have? _________
5. Are the shaded faces parallel, perpendicular, or neither?
   a)                           b)                           c)

   ______________________    ______________________    ____________________
Unit 13: Geometry

Quiz (Lessons 21–24) — AB

1. Teacher to check pictures.
   a) yes
   b) yes
   c) yes
   d) no

2. Teacher to check.

3. no

4. Teacher to check shading.
   a) pentagon-based pyramid
   b) triangle-based prism
   c) triangle-based pyramid
   d) pentagon-based prism

BONUS
   a) 10
   b) 10
   c) 18

5. a) parallel
   b) perpendicular
   c) neither
1. Do the marked edges or faces intersect? Write “yes” or “no.” If they intersect, trace the edge or mark the vertex where they meet.

a) ___________________  b) ___________________  c) ___________________  d) ___________________

2. Hannah finds a face in a triangular prism that intersects with every other face. What is the shape of this face? Explain how you know.

___________________________________________________________________________
___________________________________________________________________________

3. Shade the base or bases. Then name the prism or pyramid.

a) ___________________  b) ___________________  c) ___________________  d) ___________________

BONUS ► A 3-D shape has 11 vertices and 20 edges.
   a) Is it a pyramid or a prism? __________________
   b) How many sides does its base have? ______
   c) Explain how you know.
4. Imagine the shape is placed on a table. One face is shaded or one edge is darkened. Is it vertical, horizontal, or neither?
   a)        b)    c)    d)
   ______________      ______________       ______________        ______________

5. Are the shaded faces parallel, perpendicular, or neither?
   a)       b)       c)
   ______________           ______________             ______________
1. Teacher to check pictures.
   a) yes
   b) no
   c) yes
   d) no

2. a) rectangle
   Sample explanation: The triangular faces are bases and do not intersect each other.

3. Teacher to check shading.
   a) hexagon-based prism
   b) rectangle-based pyramid
   c) triangle-based prism
   d) pentagon-based pyramid

   **BONUS**
   a) pyramid
   b) 10
   c) Sample explanation: In a pyramid, there is one more vertex than the number of sides in the base, and twice as many edges as sides in the base. In a prism, the number of vertices is always an even number.

4. a) horizontal
   b) vertical
   c) vertical
   d) horizontal

5. a) perpendicular
   b) neither
   c) parallel
1. Find the perimeter and area of the rectangle using the length and the width. Include the units.
   a) Length = 8 cm  
   Width = 9 cm  
   Perimeter = _______________  
   Area = _______________
   b) Width = 5 m
   Length = 7 m
   Perimeter = _______________  
   Area = _______________

2. Anna wants to use ribbon to decorate the edge of a rectangular box. The box is 60 mm long and 45 mm wide. She has 20 cm of ribbon. Is that enough? Explain how you know.

3. a) Estimate the length and the width of the rectangle in centimetres. Then estimate the perimeter.

   b) Measure the length and the width of the rectangle to the nearest tenth of a centimetre. Then calculate the perimeter.

   BONUS ► Each square side is 2 cm long. Find the perimeter and the area of the shape.
Unit 14: Measurement
Quiz (Lessons 12–16) — AB

1. a) \(8 + 9 + 8 + 9\)
   \[34 \text{ cm} \]
   \[8 \times 9 \]
   \[72 \text{ cm}^2\]

   b) \(5 + 7 + 5 + 7\)
   \[24 \text{ m} \]
   \[5 \times 7 \]
   \[35 \text{ m}^2\]

2. \(60 + 45 + 60 + 45\)
   \[= 210 \text{ mm} = 21 \text{ cm}\]
   Anna does not have enough ribbon.

3. a) Answers will vary.
   Sample estimates:
   Length: 3 cm
   Width: 4 cm
   Perimeter: 14 cm

   b) Length: 3.1 cm
   Width: 3.8 cm
   Perimeter: 13.8 cm

BONUS
   Perimeter: 28 cm
   Area: 32 cm\(^2\)
1. Write a multiplication equation for the number of blocks in the top layer.
   a) \[ \quad \]
   b) \[ \quad \]
   c) \[ \quad \]

2. How many blocks are in the shaded row?
   a) \[ \quad \] blocks
   b) \[ \quad \] blocks
   c) \[ \quad \] blocks

3. Find the volume of the object made from unit cubes. Include the units.
   a) Volume = \[ \quad \]  \( \text{cm}^3 \)
   b) Volume = \[ \quad \]  \( \text{m}^3 \)
   c) Volume = \[ \quad \]  \( \text{m}^3 \)

4. Find the volume of the prism.
   \[ \quad \text{Volume} = \quad \text{mm}^3 \]
BONUS ► Sketch three different rectangular prisms with the volume of 8 cm³.
Unit 14: Measurement
Quiz (Lessons 17, 18) — AB

1. a) $2 \times 3 = 6$
   b) $2 \times 3 = 6$
   c) $4 \times 3 = 12$

2. a) 3
   b) 6
   c) 12

3. a) 8 cm$^3$
   b) 11 m$^3$
   c) 18 m$^3$

4. $5 \times 3 \times 2 = 30$ mm$^3$

BONUS
Teacher to check that dimensions of sketches are $8 \times 1, 4 \times 2,$ and $2 \times 2 \times 2$
1. Convert the measurements in litres to millilitres.
   a) 2.3 L = ________ mL  
   b) 0.45 L = ________ mL  
   c) 1.07 L = ________ mL  
   d) 10.5 L = ________ mL  
   e) 0.008 L = ________ mL  
   f) 20.060 L = ________ mL  

2. Convert the measurements in millilitres to a mixed measurement.
   a) 2450 mL = ______ L ______ mL  
   b) 3040 mL = ______ L ______ mL  
   c) 750 mL = ______ L ______ mL  
   d) 2065 mL = ______ L ______ mL  
   e) 4008 mL = ______ L ______ mL  
   BONUS ► 90 040 mL = ______ L ______ mL  

3. To make fruit punch, Fran needs:
   - 970 mL of apple juice  
   - 250 mL of cranberry juice  
   - 330 mL of mango juice  
   - 1.5 L of lemonade  

   Should Fran use a 3 L jar or a 4 L jar to mix the punch? Explain.

4. Find the volume and the capacity of the aquarium. Include the units.
   Volume = ______________________  
   = ____________  
   Capacity = ____________
Unit 14: Measurement
Quiz (Lessons 20–22) — AB

1. a) 2300 mL
   b) 450 mL
   c) 1070 mL
   d) 10 500 mL
   e) 8 mL
   f) 20 060 mL

2. a) 2, 450
   b) 3, 40
   c) 0, 750
   d) 2, 65
   e) 4, 8
   BONUS
      90, 40

3. 970 + 250 + 330 + 1500
   = 3050 mL
   = 3 L 50 mL
   Fran should use the 4 L jar.

4. 40 × 30 × 20
   24 000 cm³
   24 000 mL or 24 L
1. Write an addition equation to find the perimeter of the swimming pool. Include the units.

   a) \[ \text{Perimeter} = 2(4	ext{ m}) + 2(7	ext{ m}) \]

   b) \[ \text{Perimeter} = 3	ext{ m} + 6	ext{ m} + 2	ext{ m} + 2(2	ext{ m}) + 2(3	ext{ m}) \]

2. Find the missing sides. (The pictures are not drawn to scale.)

   a) Perimeter = 16 cm

   b) Perimeter = 12 m

   BONUS ▶ Perimeter = 36 m

3. Write an equation for the area of the rectangle. Then find the unknown length.

   a) Width = 3 cm

   \[ \text{Area} = 27 \text{ cm}^2 \]

   BONUS ▶ Width = 10 m

   \[ \text{Area} = 46 \text{ m}^2 \]

4. Find the length and the area of the rectangle. Include the units.

   a) Width = 2 cm     Perimeter = 14 cm

   \[ \text{Length} = \text{?} \text{ cm} \]

   \[ \text{Area} = \text{?} \text{ cm}^2 \]

   b) Width = 4 cm     Perimeter = 20 cm

   \[ \text{Length} = \text{?} \text{ cm} \]

   \[ \text{Area} = \text{?} \text{ cm}^2 \]
5. a) Draw two rectangles that have the same perimeter but different areas.

b) Mike thinks that a rectangle with a larger area than another rectangle will also always have a larger perimeter. Is he correct? Explain.

**BONUS** ► The length of a square field is about 5 cars. A car is about 4 m long.

a) About how many metres long is the field? ________

b) What is the perimeter of the field? about ________

6. Find the volume of the object made from unit cubes. Include the units.

a) 

Volume = _______________

b) 

Volume = _______________
Unit 14: Measurement
Test (Lessons 13–18, 20–22) — AB

7. Find the volume of the prism.
   a) Length = _____  
      Width = _____  
      Height = _____  
      Volume = ____________ = _______
   b) Length = _____  
      Width = _____  
      Height = _____  
      Volume = ____________ = _______

8. Find the volume and the capacity of the aquarium. Include the units.
   a)  
      Volume = ____________  
      Capacity = __________
   b)  
      Volume = ____________  
      Capacity = __________

9. The volume of the prism is 42 m$^3$. What is the length of the prism?

10. An aquarium has a length of 40 cm and a width of 25 cm. The water in the aquarium is 10 cm high. How much water is in the aquarium?

   BONUS ➤ Dory added 4 L of water to the aquarium. What is the new height of the water in the aquarium?
1. a) \[4 + 7 + 4 + 7 = 22 \text{ m}\]
b) \[3 + 3 + 1 + 3 + 2 + 6 = 18 \text{ m}\]

2. a) 5, 5
b) 4, 4

BONUS
10

3. a) \[3 \times l = 27 \text{ cm}^3\]
   \[l = \frac{27}{3} = 9 \text{ cm}\]
b) \[10 \times l = 46 \text{ m}^2\]
   \[l = \frac{46}{10} = 4.6 \text{ m}\]

4. a) 5 cm
   10 cm²
b) 6 cm
   24 cm²

5. a) Sample rectangles: 4 × 1 and 3 × 2
b) He is not correct.
   Sample explanation:
   A 4 × 1 rectangle and a 3 × 2 rectangle have the same area but different perimeters.

BONUS
a) 20 m
b) 80 m

6. a) 12 cm³
b) 24 m³

7. a) 2 cm
   3 cm
   5 cm
   \[2 \times 3 \times 5 = 30 \text{ cm}^3\]
b) 11 m
   5 m
   6 m
   \[11 \times 5 \times 6 = 330 \text{ m}^3\]

8. a) \[50 \times 20 \times 20 = 20 000 \text{ cm}^3\]
   \[20 000 \text{ mL or } 20 \text{ L}\]
b) \[30 \times 30 \times 60 = 54 000 \text{ cm}^3\]
   \[54 000 \text{ mL or } 54 \text{ L}\]

9. \[2 \times 3 \times l = 42\]
   \[l = \frac{42}{6} = 7 \text{ m}\]

10. \[40 \times 25 \times 10 = 10 000 \text{ cm}^3\]
There is 10 000 mL or 10 L of water in the aquarium.

BONUS
The total amount of the water is now 14 L, so the height is now 14 cm.
1. Write the number of outcomes for the event.
   a) spinning A ______  b) spinning B ______
   c) spinning D ______  d) spinning a letter in “CANADA” ______
   e) spinning one of the first four letters of the alphabet ______

2. a) Which event in Question 1 is impossible? ________________________________________
   b) Which event in Question 1 is certain? ___________________________________________
   BONUS ► Which event in Question 1 has even chances? ___________________________

3. Fill in the blank with “less likely than,” “more likely than,” or “equally as likely as.”
   a) Drawing a yellow marble is ________________________ drawing a red marble.
   b) Drawing a blue marble is ________________________ drawing a white marble.
   c) Drawing a yellow marble is ________________________ drawing a blue marble.
   BONUS ► Drawing a green marble is ________________________ drawing a white marble.
Unit 15: Probability and Data Management

Quiz (Lessons 9–11) — AB

1. a) 2  
b) 1  
c) 0  
d) 3  
e) 4  

2. a) spinning D  
b) spinning one of the first four letters of the alphabet  
BONUS  
spinning A  

3. a) equally as likely as  
b) more likely than  
c) more likely than  
BONUS  
less likely than
1. How many outcomes are there in total? How many blue outcomes are there?
   a) _____ outcomes  
   b) _____ outcomes
   _____ blue outcomes  _____ blue outcomes

2. Use the picture in Question 1.b). Fill in the blank with “less likely than,” “more likely than,” or “equally as likely as.”
   a) Drawing a blue marble is ________________________ drawing a red marble.
   b) Drawing a green marble is ________________________ drawing a blue marble.
   c) Drawing a red marble is ________________________ drawing a green marble.
   BONUS ► Drawing a white marble is ________________________ drawing a yellow marble.

3. a) Use “certain,” “likely,” “even chance,” “unlikely,” or “impossible” to describe the event.
   i) picking red  
   ii) spinning blue
   ______________  ______________

   b) Is spinning red or blue in part ii) equally likely? _____ Explain. _______________________

4. a) Design a spinner with red and blue parts where spinning blue is less likely than red.
   ![Spinner](image1.png)

   b) Design a spinner with red, blue, white, and green parts where spinning green is equally as likely as blue.
   ![Spinner](image2.png)
Unit 15: Probability and Data Management

Test (Lessons 9–11) — AB

1. a) 6
   b) 4
2. a) more likely than
   b) equally as likely as
   c) less likely than
   **BONUS**
   equally as likely as
3. a) i) even chance
     ii) unlikely
     iii) impossible
   b) Yes, there are the same number of red parts as there are blue parts.
4. Teacher to check.