

Includes Updated
Tasks & Revised
Math Expectations



M3—Creating a Collaborative Continuum Supporting all Learners in Grades 7, 8, and 9



an EOCCC Resource

Working Together for Catholic Education

www.eoccc.org

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Catholic Graduate Expectations

Catholic educators continually strive to embed Catholic Expectations in their daily practice. Through the use of the continuum of tasks framework both educators and students have the opportunity to deepen their mathematical learning. This resource provides many opportunities for educators to support and meet the needs of all learners while embracing the dignity of all. The tasks contribute to the building of a supportive community and a focus on excellence for both students and educators. The resource provides multiple opportunities for assessment and allows for ongoing reflection to further guide instructional decisions. Below is a link to a variety of the key Catholic Graduate Expectations reflected in this resource.

In each lesson plan, a Pre-Minds On section is included to help build a classroom community that respects the rights, responsibilities and contributions of self and others. These activities help students adopt a holistic approach to life by integrating learning from various subject areas and experiences.

A Discerning Believer

CGE1h

An Effective Communicator

CGE2a, CGE2c, CGE2c, CGE2d

A Reflective and Creative Thinker

CGE3b, CGE3c, CGE3d

A Self-directed, Responsible, Lifelong Learner

CGE4a, CGE4b, CGE4c, CGE4e, CGE4f

A Collaborative Contributor

CGE5a, CGE5b, CGE5c, CGE5d, CGE5e, CGE5f, CGE5g

A Responsible Citizen

CGE7b, CGE7j

Why This? Why Now?

The original resource was created in 2017 to support the need for improvement in the teaching and learning of mathematics. Due to the recent changes in the Ontario mathematics curriculum (Grades 1-8 and the Destreaming of Grade 9), the tasks in the original resource have been updated to reflect all adjustments made to the overall and specific expectations.

The parallel tasks included in this resource have been created using the developmental continuum found in the new Ontario mathematics curriculum. The new curriculum also focuses on the development of social/emotional skills and the 7 mathematical processes across all grade levels. The tasks in this resource provide a variety of opportunities for students to develop these important skills through a problem-solving approach.

The goals of this resource are to help teachers become more familiar with the new curriculum, while also supporting a divisional approach to gap closing in the intermediate grades.

Outcomes:

- Teachers will gain deeper understanding of the new Ontario Mathematics Curriculum and the continuum of intermediate curriculum expectations, while continuously embedding Catholic teachings in a variety of ways.
- Students will be exposed to a variety of problem-solving tasks, in which they can use the mathematical processes to solve and communicate their thinking.
- By working collaboratively and independently on these tasks, students will continue to build their confidence, resilience and a positive math mindset.
- Parallel tasks provide opportunities for educators to moderate and study student work in order to support students and plan instruction. Through collaborative planning and differentiating instruction, educators tailor learning opportunities to the needs of each student.
- A new translatable Google Doc has been created for each task. This will ensure that all students can easily access and understand the problems they are working through.

Social-Emotional Learning Skills

The development of social-emotional learning (SEL) skills helps students foster overall health and well-being, positive mental health, and the ability to learn, build resilience, and thrive.

(pg. 36, Ontario Mathematics Curriculum, 2021)

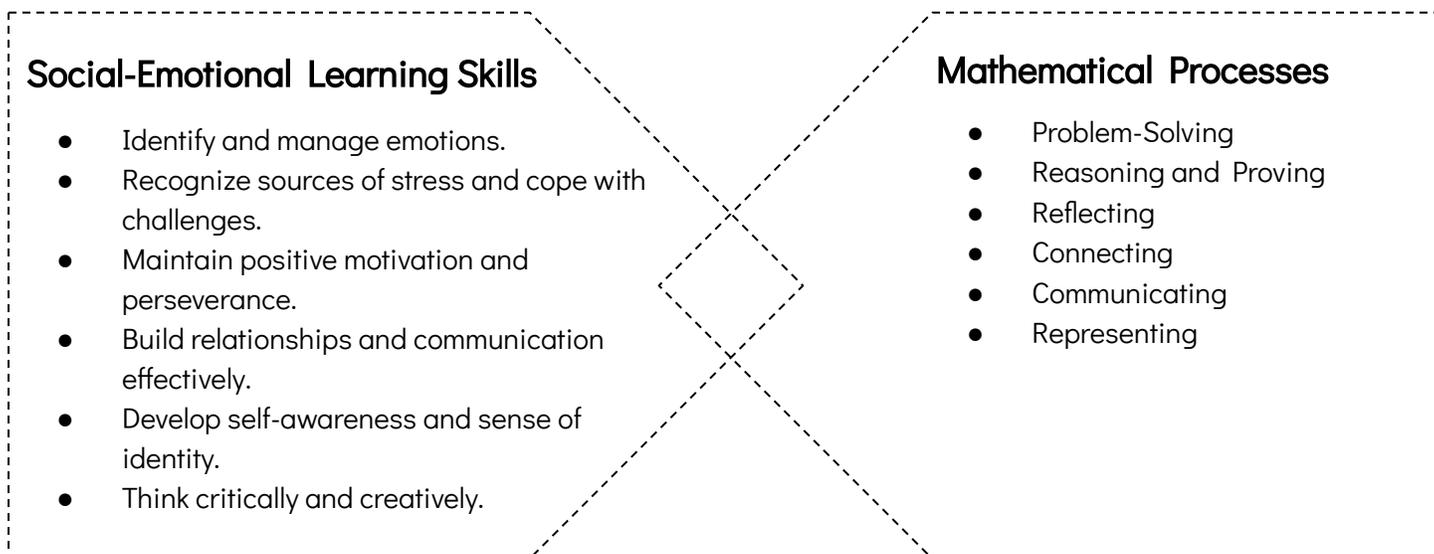
Social-emotional learning skills help students develop confidence, cope with challenges and think critically. The goal is to help students increase, expand and/or enlarge their toolkit of skills and abilities, so that they can see themselves as capable and confident math learners.

The tasks in this resource will provide students with many opportunities to develop their social-emotional learning skills and use the math processes in different ways across different areas in the mathematics curriculum.

Students will learn to:

- make connections between different mathematical concepts and in their everyday life.
- recognize mistakes as part of the learning journey.
- use their toolkit of skills and strategies when working through challenging problems.

Social-Emotional Learning Skills & The Mathematical Processes



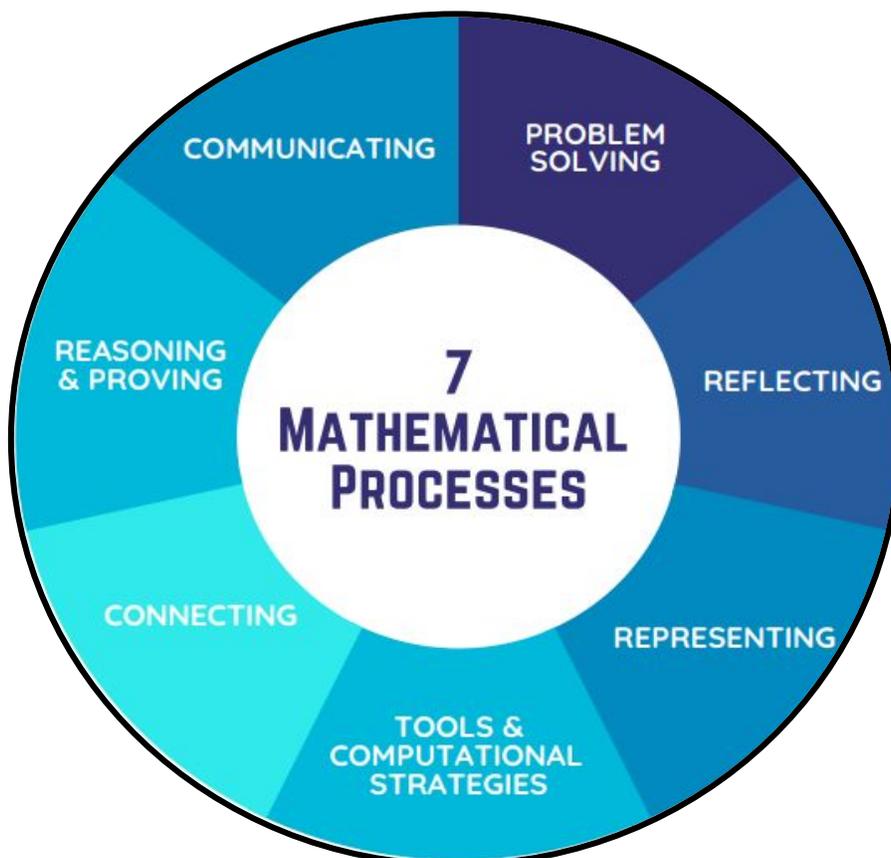
Students build a solid mathematical foundation and a positive mathematical identity and mindset simultaneously.

Math Processes

In the revised mathematics curriculum (2020), the Ontario government has identified 7 key **mathematical processes** that support effective learning in mathematics:

- problem-solving
- reasoning and proving
- reflecting
- connecting
- communicating
- representing
- selecting tools and strategies

The mathematical processes *cannot* be separated from the knowledge, concepts, and skills that students acquire throughout each academic year. All students problem-solve, communicate, reason, reflect, and so on, as they develop the knowledge and the understanding of mathematical concepts and make connections between different areas of the curriculum. As teachers, our goal is to provide students with multiple opportunities to develop the skills and abilities necessary to effectively apply these processes.



Mathematical Processes

These posters and “I can...” statements, provide prompts to help students understand the Mathematical Processes. Click on the posters below to access the link to a printable version. The communication and problem solving mathematical process are embedded in the five listed below.

Mathematical Processes Posters	“I Can” Statements for Students
Connecting	I can: <ul style="list-style-type: none">● see how new concepts and skills build on old ones● apply mathematics to solve problems inside and outside of mathematics class
Reasoning & Proving	I can: <ul style="list-style-type: none">● hypothesize and make conjectures● decide how to test my hypothesis● test my conjecture● infer, justify, and conclude
Representing	I can: <ul style="list-style-type: none">● mathematize a situation using concrete materials, pictures, diagrams, graphs, tables, numbers, words or symbols
Reflecting	I can: <ul style="list-style-type: none">● think about my reasonableness● consider the implications of data collected● self-monitor my progress
Selecting Tools & Computational Strategies	I can: <ul style="list-style-type: none">● use manipulatives and/or technology to understand new concepts, to communicate, or to perform tasks● consider the question before I choose my computational strategy

How to Use this Resource



Praying together, walking together, working together: this is the way that leads to Christian unity. [#WCC70](#)

7:30 AM - June 21, 2018

This resource demonstrates how Catholic teachings and the principles of 'Growing Success' synchronically inform assessment and instructional practises.

The parallel tasks and 3-part lesson plans in this resource, provide opportunities for diagnostic assessments and differentiated, personalized instruction. By viewing Mathematics through the intermediate grades, as a grade 7 to 9 continuum of expectations, educators will meet students where they are on their learning journey, thus respecting the dignity of every learner in their classroom.

We encourage teachers to use this resource as a division or whole school focus, as it can provide opportunities for moderation, rich math discussions and divisional planning.

Each slide is designed to be easily accessible and can be used in a number of ways, including on a SmartBoard, projected on a basic white board, or printed off for group or individual use.

The **Home** icon  takes you back to the top of the Table of Contents.

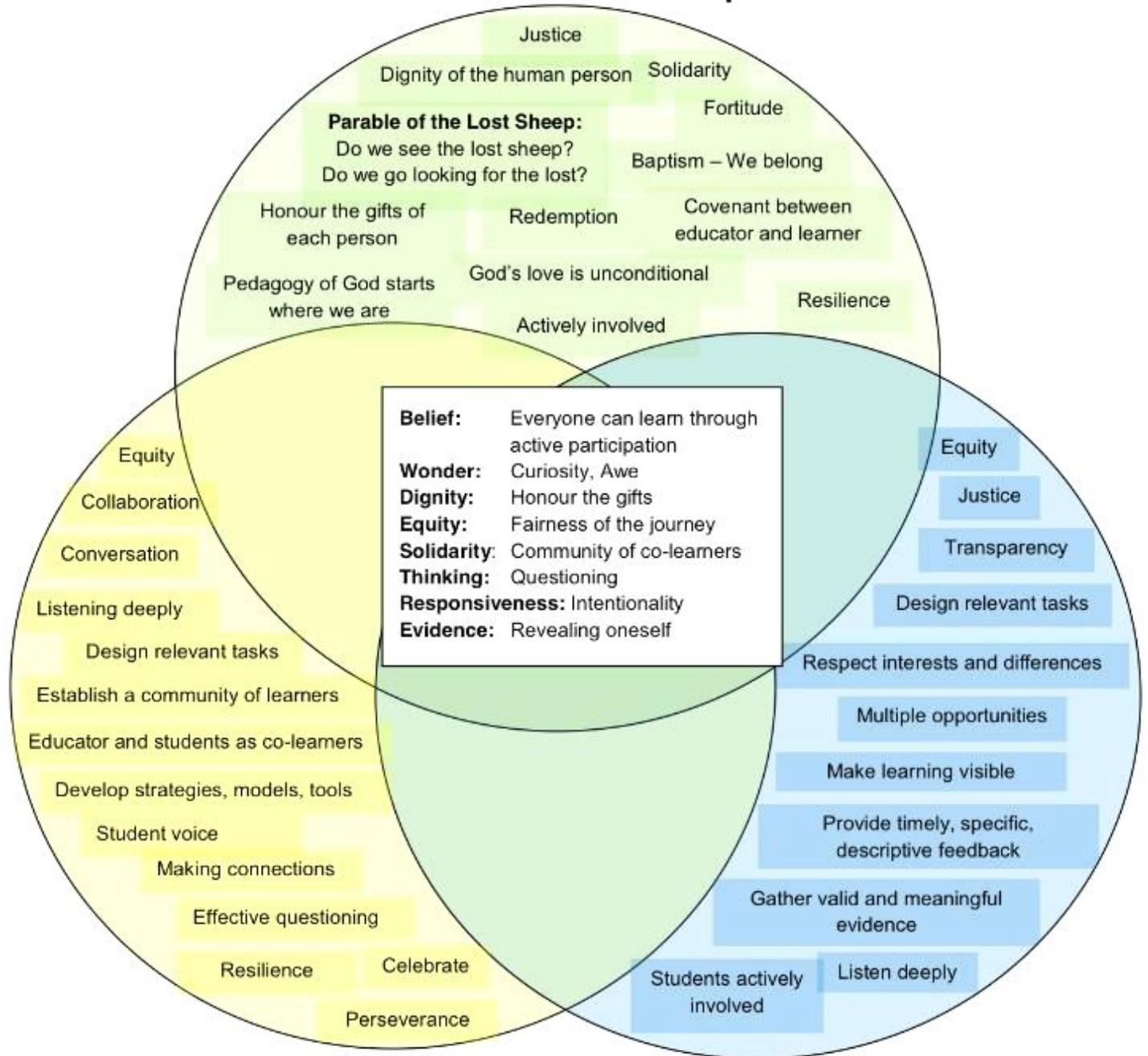
The **Table of Contents** is organized in such a way that every educator can access the questions simply by clicking on the blue links below each of tasks. The blue links will bring you to the specific parts of each task, or you can scroll through the resource to access the lesson plans and differentiated open response questions.

*Click on the  icon at the top right hand corner of the screen for optimum use of links.

Learning Journeys

Supporting Every Student's Success in Mathematics

How do Catholic teachings inform assessment and instructional practices?



What constitutes effective mathematics instruction?

How do the principles of 'Growing Success' inform instructional practices?

Accommodations & Modifications

“The primary purpose of Catholic education is to embrace each student as a child of God worthy of being educated with genuine respect and sensitivity by creating a culture of hope within our classrooms and schools.”

Seeing Through the Eyes of Jesus, pg. 13, 2013

Through our vocation as Catholic educators we recognize the light of God in every student and strive to provide a learning space that celebrates and respects their diversity, while ensuring we maintain the dignity of each learner.

Understanding that every child enters a classroom with different skills, talents and experiences, this resource was developed to meet all students where they are at in their math learning journey.

This resource allows educators to use parallel tasks in ways that encourage and build classroom community to embody the Catholic Graduate Expectations, while continuing to develop their faith.

Each task in this resource is accompanied by parallel activities that can be used to enhance learning and comprehension in any intermediate classroom. Teachers can incorporate any of the supplied tasks as needed to help students reach their learning goals in mathematics.

In the Table of Contents, there is now an option to access the tasks on a translatable Google Doc. This new feature will enable students to use the *Read & Write* application as well as the *Translate Document* tool within Google Docs.



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Task 1: Savings on Apples

Strands: Number (7 & 8), Number and Geometry and Measurement (9)

Overall Expectations

- **Grade 7 & 8**
B2 use knowledge of numbers and operations to solve mathematical problems encountered in everyday life
- **Grade 9**
B3 apply an understanding of rational numbers, ratios, rates, percentages, and proportions, in various mathematical contexts, and to solve problems
E1 demonstrate an understanding of the development and use of geometric and measurement relationships, and apply these relationships to solve problems, including problems involving real-life situations

Specific Expectations

- **Grade 7**
B2.1 use the properties and order of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and percents, including those requiring multiple steps or multiple operations
- **Grade 8**
B2.1 use the properties and order of operations, and the relationships between operations, to solve problems involving rational numbers, ratios, rates, and percents, including those requiring multiple steps or multiple operations
- **Grade 9**
B3.5 pose and solve problems involving rates, percentages, and proportions in various contexts, including contexts connected to real-life applications of data, measurement, geometry, linear relations, and financial literacy
E1.3 solve problems involving different units within a measurement system and between measurement systems, including those from various cultures or communities, using various representations and technology, when appropriate



Grade 9

Task: Savings on Apples

Janice and Irene buy apples at different stores.

- Janice pays \$0.80 for 500 g of apples.
- Irene pays \$5.25 for 3 kg of apples.

How much more will Irene pay than Janice if they had each bought 9 kg of apples?

Show your work.

Grade 8

Task: Savings on Apples

Janice and Irene buy apples at different stores. Both stores sell apples by the kilogram.

- Janice pays \$6.00 for 3.75 kg of apples at Sally's Supermarket.
- Irene pays \$5.25 for 3 kg of apples at Minh's Grocery.

At which store will it cost less to purchase 9 kg of apples?

Show your work.

Grade 7

Task: Savings on Apples

Janice and Irene buy apples at different stores. Both stores sell apples by the kilogram.

- Janice pays \$6.00 for 3.75 kg of apples.
- Irene pays \$5.25 for 3 kg of apples.

Which is the better deal?

Justify your answer.

Task 2: More Snacks Please

Strand: Number

Overall Expectations

- **Grade 7**
B.2 use knowledge of numbers and operations to solve mathematical problems encountered in everyday life
- **Grade 8**
B.2 use knowledge of numbers and operations to solve mathematical problems encountered in everyday life
- **Grade 9**
B.3 apply an understanding of rational numbers, ratios, rates, percentages, and proportions, in various mathematical contexts, and to solve problems

Specific Expectations

- **Grade 7**
B2.1 use the properties and order of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and percents, including those requiring multiple steps or multiple operations
B2.10 identify proportional and non-proportional situations and apply proportional reasoning to solve problems
- **Grade 8**
B2.1 use the properties and order of operations, and the relationships between operations, to solve problems involving rational numbers, ratios, rates, and percents, including those requiring multiple steps or multiple operations
B2.8 compare proportional situations and determine unknown values in proportional situations, and apply proportional reasoning to solve problems in various contexts
- **Grade 9**
B3.5 pose and solve problems involving rates, percentages, and proportions in various contexts, including contexts connected to real-life applications of data, measurement, geometry, linear relations, and financial literacy



[3-Part Lesson for More Snacks Please](#)



Grade 9

Task: More Snacks, Please!

Raisins and sunflower seeds are sold in packages of 250g. The ratio of raisins to the mass of sunflower seeds is 3 to 5.

Determine the mass of raisins in a package.

Show your work.

Grade 8

Task: More Snacks, Please!

Raisins and sunflower seeds are sold in packages of 250g. The ratio of raisins to the mass of sunflower seeds is 3 to 5.

Determine the percentage of raisins in a package.

Show your work.

Grade 7

Task: More Snacks, Please!

Raisins and sunflower seeds are sold in packages of 250g. The ratio of raisins to the mass of sunflower seeds is 3 to 5.

Determine the fraction of raisins in a package.

Show your work.

Now that we know the fraction of raisins, determine the percent of raisins per package.

Show your work.

Task 3: Line Them Up!

Strand: Algebra

Overall Expectations

- **Grade 7 & 8**
C1 identify, describe, extend, create, and make predictions about a variety of patterns, including those found in real-life context
- **Grade 9**
C1 demonstrate an understanding of the development and use of algebraic concepts and of their connection to numbers, using various tools and representations
C3 represent and compare linear and non-linear relations that model real-life situations, and use these representations to make predictions

Specific Expectations

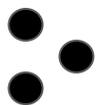
- **Grade 7**
C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in repeating, growing, and shrinking patterns involving whole numbers and decimal numbers, and use algebraic representations of the pattern rules to solve for unknown values in linear growing patterns
- **Grade 8**
C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in growing and shrinking patterns involving rational numbers, and use algebraic representations of the pattern rules to solve for unknown values in linear growing and shrinking patterns
- **Grade 9**
C1.2 create algebraic expressions to generalize relationships expressed in words, numbers, and visual representations, in various contexts
C3.2 represent linear relations using concrete materials, tables of values, graphs, and equations, and make connections between the various representations to demonstrate an understanding of rates of change and initial values



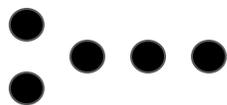
Grade 9

Task: Line Them Up!

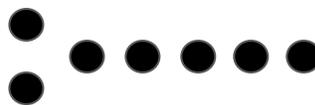
Juan draws the first three terms of a pattern as shown below.



Term 1



Term 2

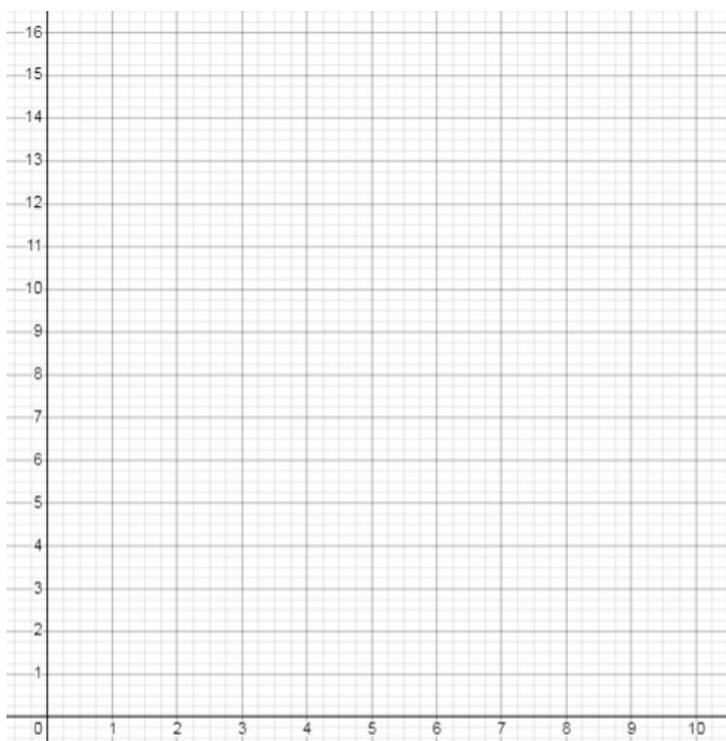


Term 3

The pattern continues to grow in the same way.

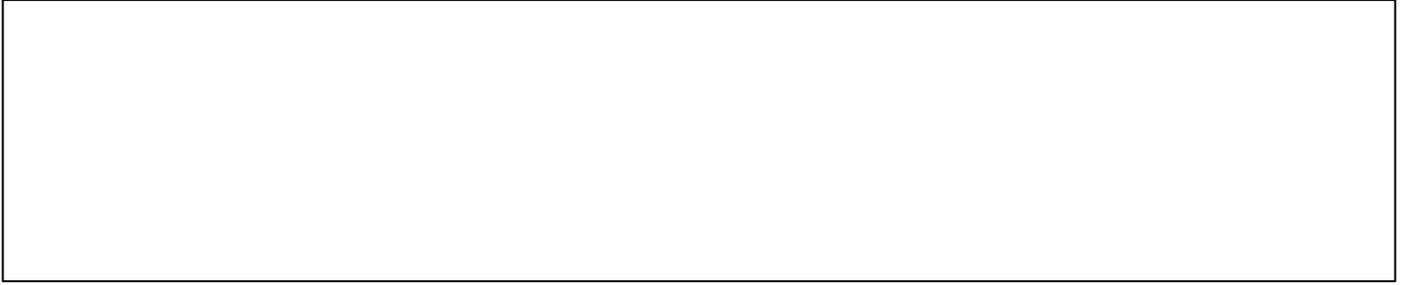
1. Create an equation to represent the pattern. _____
2. Record your data on the table and graph it on the grid below.

Term number, n	Number of dots, N
1	3
2	5
3	
4	
5	
6	



3. How many dots would there be in Term 53?

4. Which term number will 145 dots?



Grade 8

Task: Line Them Up

Juan draws the first three terms of a pattern as shown below.



Term 1



Term 2

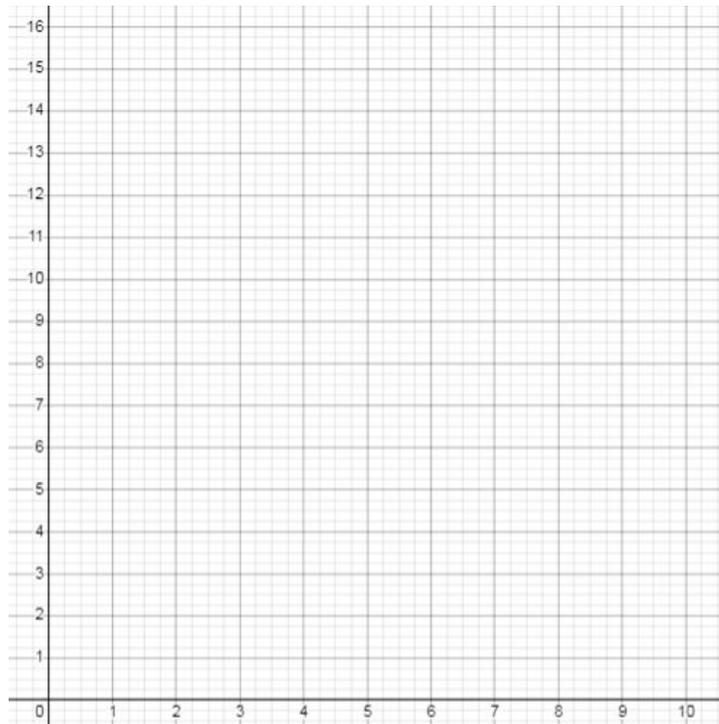


Term 3

The pattern continues to grow in the same way. Complete the following table according to the pattern.

- 1) Write a pattern rule for the pattern above. _____
- 2) Record your data using the table below and then record it on the grid. (Don't forget to label your X and Y axis)

Term number, n	Number of dots, N
1	3
2	5
3	
4	
5	
6	



- 3) Which Term will have 23 dots? _____

3) How many dots will there be at Term 89? _____



Grade 7

Task: Line Them Up

Juan draws the first three terms of a pattern as shown below.



Term 1



Term 2

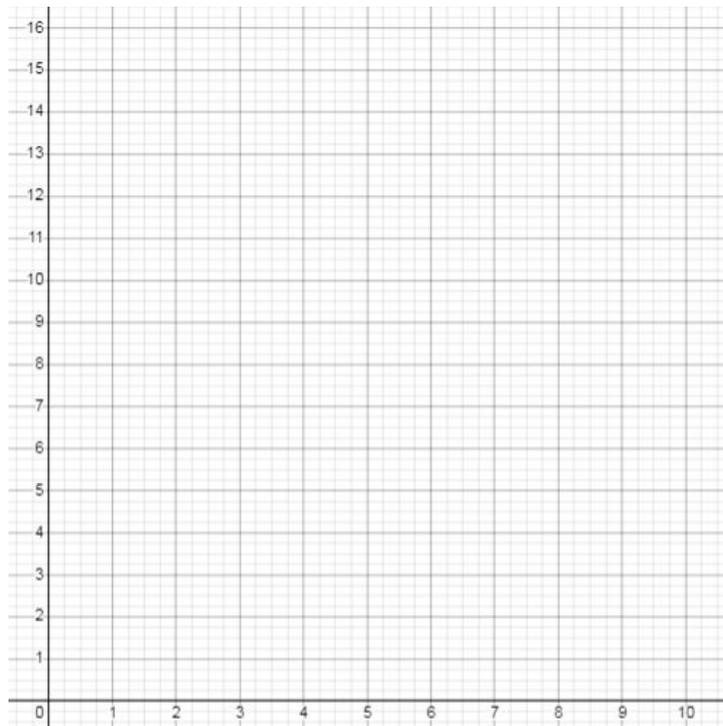


Term 3

The pattern continues to grow in the same way. Complete the following table according to the pattern.

- 1) Write a pattern rule for the pattern above. _____
- 2) Graph the data from the table on the grid above. Don't forget to label your X and Y axis.

Term number, n	Number of dots, N
1	3
2	5
3	
4	
5	
6	



- 3) How many dots will there be at Term 36? _____

Task 4: Terrific Ts

Strand: Algebra

Overall Expectations

- **Grade 7 & 8**
C2. demonstrate an understanding of variables, expressions, equalities, and inequalities, and apply this understanding in various contexts
- **Grade 9**
C1. demonstrate an understanding of the development and use of algebraic concepts and of their connection to numbers, using various tools and representations

Specific Expectations

- **Grade 7**
C2.1 add and subtract monomials with a degree of 1 that involve whole numbers, using tools
C2.2 evaluate algebraic expressions that involve whole numbers and decimal numbers
- **Grade 8**
C2.1 add and subtract monomials with a degree of 1, and add binomials with a degree of 1 that involve integers, using tools
C2.2 evaluate algebraic expressions that involve rational numbers
- **Grade 9**
C1.2 create algebraic expressions to generalize relationships expressed in words, numbers, and visual representations, in various contexts
C1.5 create and solve equations for various contexts, and verify their solutions



[3-Part Lesson for Terrific Ts](#)



Grade 9

Task: Terrific Ts

A school orders T-shirts from Terrific Ts. The total cost is made up of a set-up fee of \$115 and a cost of \$3 per T-shirt.

Terrific Ts requires a minimum order of 25 T-shirts. The school can spend a maximum of \$800.

Determine all the possible values of the total cost, C , and the number of T-shirts, n , for this situation.

Show your work.

Grade 8

Task: Terrific Ts

A school orders T-shirts from Terrific Ts. The total cost is made up of a set-up fee of \$115 and a cost of \$3 per T-shirt.

The school can spend a maximum of \$800.

Determine the number of T-shirts, n , the school would order for \$800.

Show your work.

Grade 7

Task: Terrific Ts

A school orders T-shirts from Terrific Ts. The total cost is made up of a set-up fee of \$115 and a cost of \$3 per T-shirt.

The school would like to place an order for 250 T-shirts.

Determine the total cost, C , of the school's order.

Show your work.

Task 5: What's the Price?

Strand: Algebra

Overall Expectations

- **Grade 7**
C1. identify, describe, extend, create, and make predictions about a variety of patterns, including those found in real-life contexts
- **Grade 8**
C1. identify, describe, extend, create, and make predictions about a variety of patterns, including those found in real-life contexts
- **Grade 9**
C3. represent and compare linear and non-linear relations that model real-life situations, and use these representations to make predictions
C4. demonstrate an understanding of the characteristics of various representations of linear and non-linear relations, using tools, including coding when appropriate

Specific Expectations

- **Grade 7**
C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in repeating, growing, and shrinking patterns involving whole numbers and decimal numbers, and use algebraic representations of the pattern rules to solve for unknown values in linear growing patterns
- **Grade 8**
C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in growing and shrinking patterns involving rational numbers, and use algebraic representations of the pattern rules to solve for unknown values in linear growing and shrinking patterns



Task 5 Continued

- **Grade 9**

C3.1 compare the shapes of graphs of linear and non-linear relations to describe their rates of change, to make connections to growing and shrinking patterns, and to make predictions

C3.2 represent linear relations using concrete materials, tables of values, graphs, and equations, and make connections between the various representations to demonstrate an understanding of rates of change and initial values

C4.4 determine the equations of lines from graphs, tables of values, and concrete representations of linear relations by making connections between rates of change and slopes, and between initial values and y-intercepts, and use these equations to solve problems

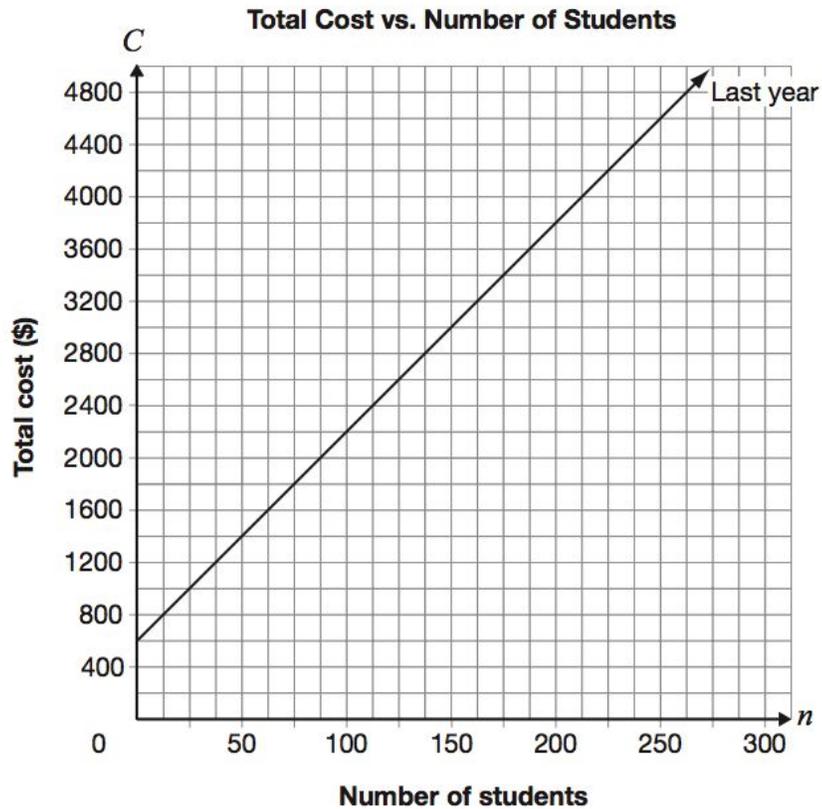


[3-Part Lesson for What's the Price?](#)



Grade 9 (option 1)

Task: What's the New Price?



The cost per person has decreased by \$5, but the initial fee has doubled. Write an equation to represent the cost, C , for **this year**.

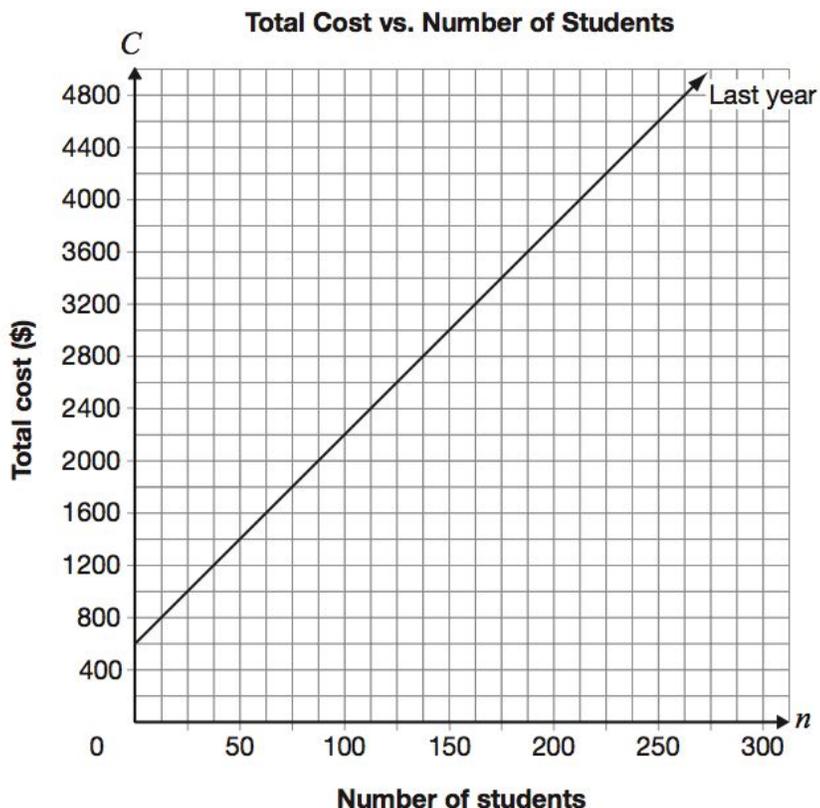
$C =$ _____

Show your work.

Describe two ways the graph for total cost for this year will be different from the graph for total cost for last year. Justify your answer.

Grade 9 (option 2)

Task: What's the New Price?



This year the cost per person has decreased by \$5, but the initial fee has doubled. State the cost per person and initial value for **this year**

Cost per person = _____

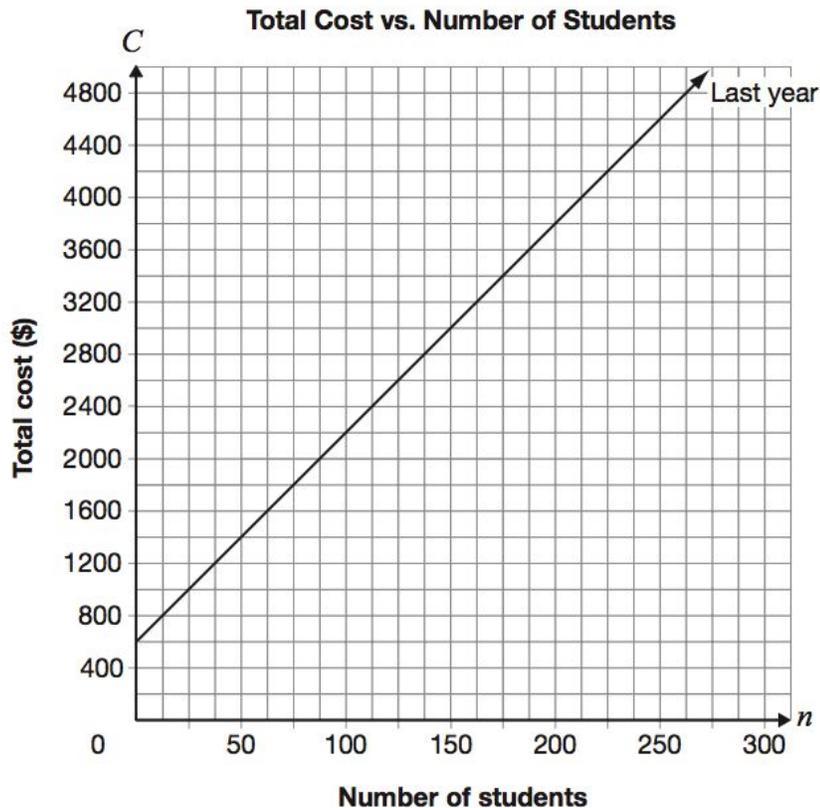
Initial Value = _____

Show your work.

Describe two ways the graph for total cost for this year will be different from the graph for total cost for last year. Justify your answer.

Grade 8

Task: What's the New Price?



The graph above represents the cost, C , of the number of students, n , to go on their year end trip **last year**.

The rental cost for the bus was \$600, plus \$16 per student.
Write an equation to represent the cost, C , for **last year**.

$$C = \underline{\hspace{10em}}$$

The cost per student has decreased by \$5, but the bus rental has doubled.

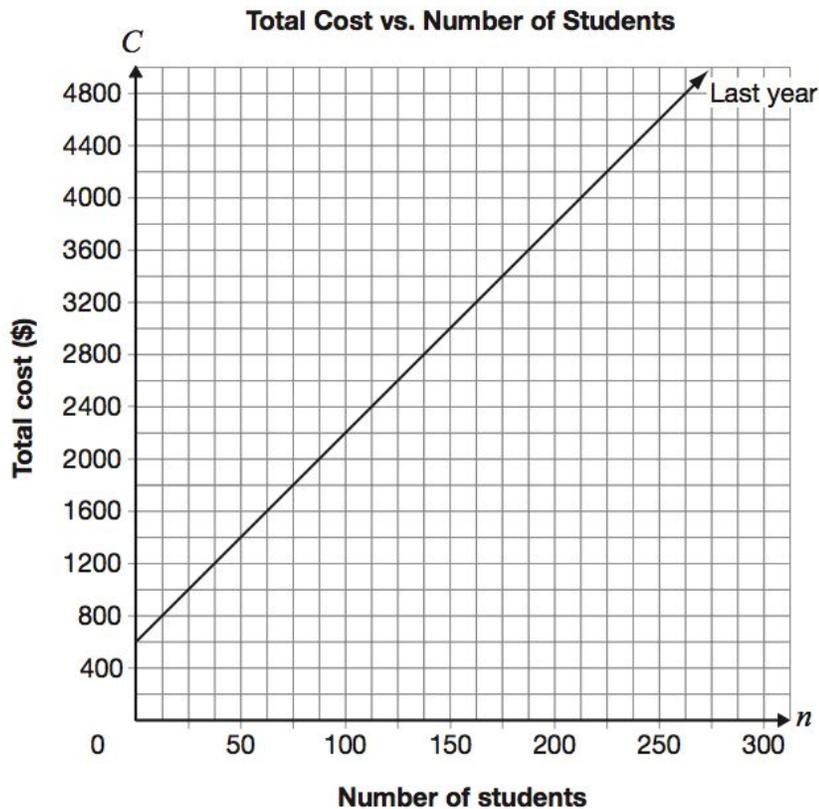
Write an equation to represent the cost, C , for **this year**.

$$C = \underline{\hspace{10em}}$$

If the school can afford \$5000 **this year**, how many students can they send?

Grade 7

Task: What's the New Price?



The above graph shows that for **last years** school trip the cost to rent the bus was \$600. The cost per student was \$16.

This year the cost of the bus has doubled and the cost per student has decreased by \$6.

Complete the following table for up to 300 students for **This Year**:

Number of Students (n)	50	100	150	200	250	300
Total Cost of Trip (C) in dollars						

Write an equation that could be used to determine how many students could go on the trip if the school could afford \$5000 **this year**.

Task 6: Hot Air Balloon

Strand: Algebra

Overall Expectations

- **Grade 7 & Grade 8**

C1. identify, describe, extend, create, and make predictions about a variety of patterns, including those found in real-life contexts

C2. demonstrate an understanding of variables, expressions, equations, and inequalities, and apply this understanding in various contexts

- **Grade 9**

C1. demonstrate an understanding of the development and use of algebraic concepts and of their connection to numbers, using various tools and representations

C3. represent and compare linear and non-linear relations that model real-life situations, and use these representations to make predictions

C4. demonstrate an understanding of the characteristics of various representations of linear and non-linear relations, using tools, including coding when appropriate

Specific Expectations

- **Grade 7**

C1.1 identify and compare a variety of repeating, growing, and shrinking patterns, including patterns found in real-life contexts, and compare linear growing patterns on the basis of their constant rates and initial values

C1.2 create and translate repeating, growing, and shrinking patterns involving whole numbers and decimal numbers using various representations, including algebraic expressions and equations for linear growing pattern

C1.4 create and describe patterns to illustrate relationships among integers

C2.4 solve inequalities that involve multiple terms and whole numbers, and verify and graph the solutions

- **Grade 8**

C1.2 create and translate repeating, growing, and shrinking patterns involving rational numbers using various representations, including algebraic expressions and equations for linear growing and shrinking patterns

C1.4 create and describe patterns to illustrate relationships among rational numbers

C2.3 solve inequalities that involve integers, and verify and graph the solutions



Task 6 Continued

- **Grade 9**

C1.2 create algebraic expressions to generalize relationships expressed in words, numbers, and visual representations, in various contexts

C3.1 compare the shapes of graphs of linear and non-linear relations to describe their rates of change, to make connections to growing and shrinking patterns, and to make predictions

C3.2 represent linear relations using concrete materials, tables of values, graphs, and equations, and make connections between the various representations to demonstrate an understanding of rates of change and initial values

C3.3 compare two linear relations of the form $y = ax + b$ graphically and algebraically, and interpret the meaning of their point of intersection in terms of a given context

C4.1 compare characteristics of graphs, tables of values, and equations of linear and non-linear relations

C4.4 determine the equations of lines from graphs, tables of values, and concrete representations of linear relations by making connections between rates of change and slopes, and between initial values and y-intercepts, and use these equations to solve problems



[3-Part Lesson for Hot Air Balloon!](#)



Grade 9

Task: Hot Air Balloon

A green hot air balloon is rising at a constant rate.

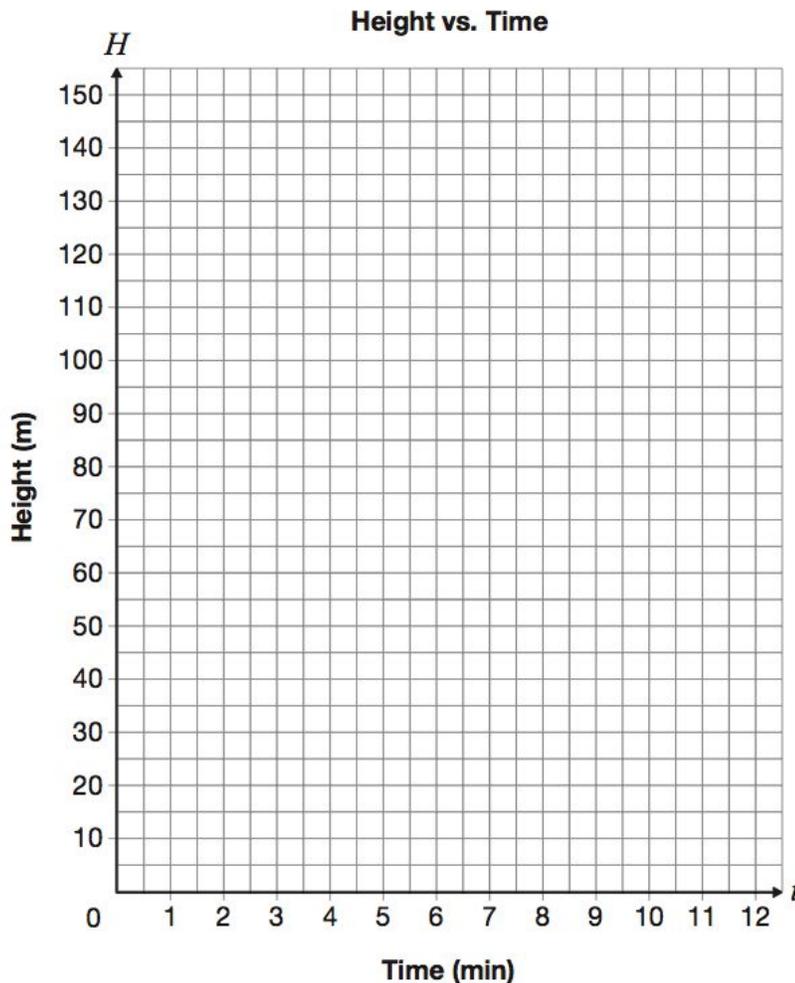
- After 2 minutes, it is at a height of 30 metres.
- After 6 minutes, it is at a height of 75 metres.

A blue hot air balloon is rising twice as fast as the green balloon.

Determine the rate in metres per minute at which the blue balloon is rising.

Show your work. You may use the grid if you wish.

Extension: Determine an equation to relate height and time for each balloon. Compare the two equations.



Grade 8

Task: Hot Air Balloon

A green hot air balloon is rising at a constant rate.

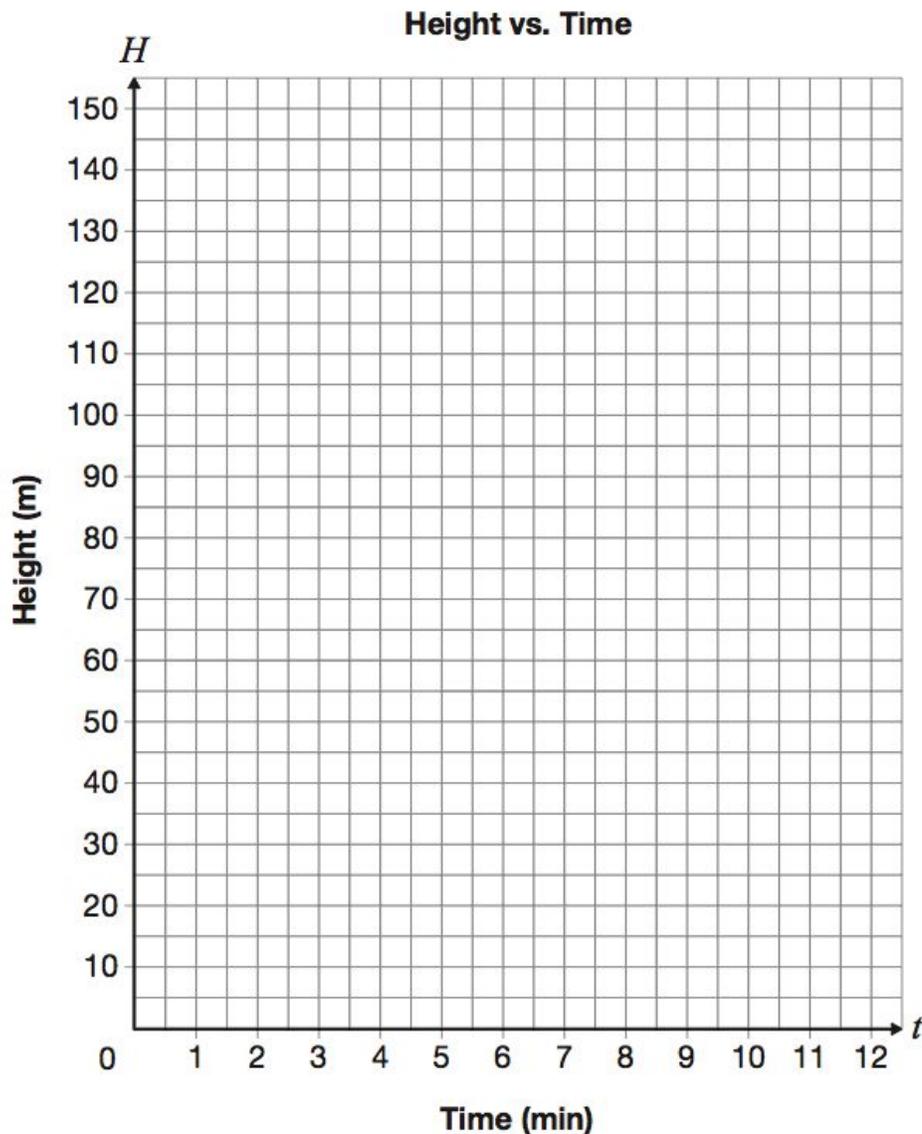
- After 2 minutes, it is at a height of 30 metres.
- After 6 minutes, it is at a height of 90 metres.

A blue hot air balloon is rising twice as fast as the green balloon.

How fast is the blue hot air rising in m/min?

Did the balloons start on the ground? Justify your answer.

Show your work. You may use the grid if you wish.



Grade 7

Task: Hot Air Balloon

A green hot air balloon is rising at a constant rate.

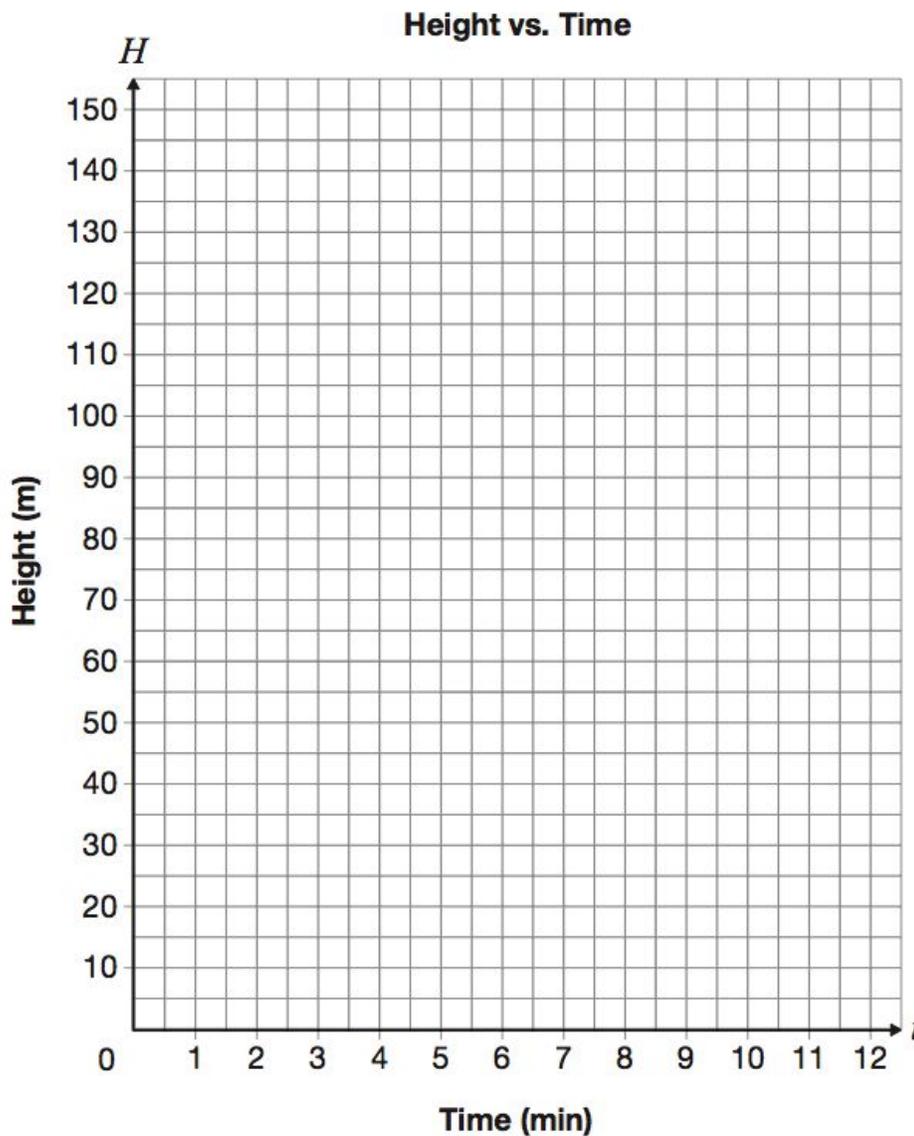
- After 2 minutes, it is at a height of 30 metres.
- After 6 minutes, it is at a height of 90 metres.

How high will it be after 9 minutes?

How high was it after 1 minute?

Did the balloon start on the ground? Justify your answer.

Show your work. You may use the grid if you wish.



Task 7: Skate On!

Strand: Measurement (7 & 8), Geometry and Measurement (9)

Overall Expectations

- **Grade 7**
E2 compare, estimate, and determine measurements in various contexts
- **Grade 8**
E2 compare, estimate, and determine measurements in various contexts
- **Grade 9**
E1 demonstrate an understanding of the development and use of geometric and measurement relationships, and apply these relationships to solve problems, including problems involving real-life situations.

Specific Expectations

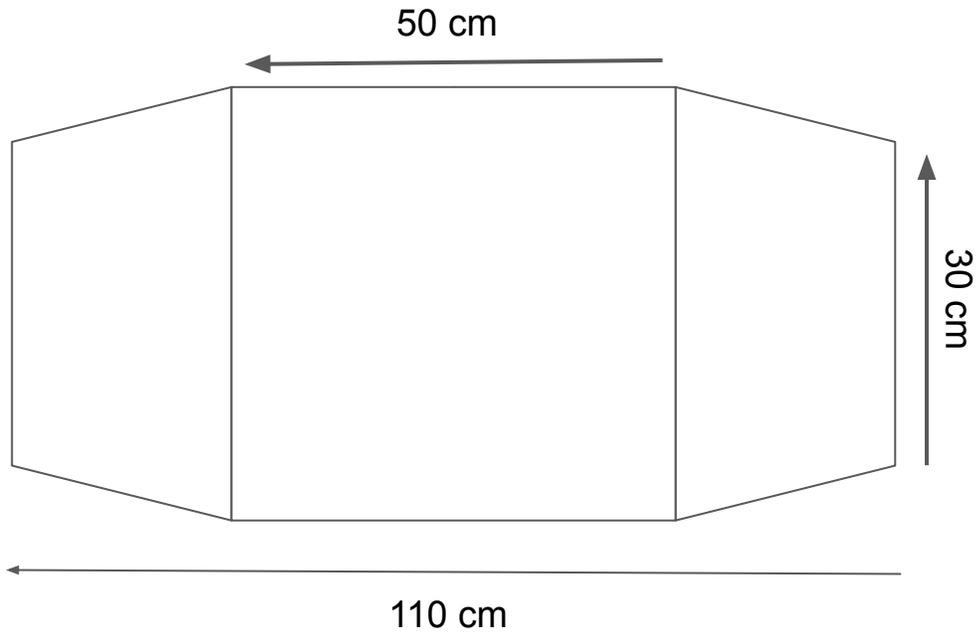
- **Grade 7**
E2.3 use the relationships between the radius, diameter, and circumference of a circle to explain the formula for finding the circumference and to solve related problems.
E2.5 show the relationships between the radius, diameter, and area of a circle, and use these relationships to explain the formula for measuring the area of a circle and to solve related questions.
- **Grade 8**
E2.3 solve problems involving the perimeter, circumference, area, volume and surface area of composite two-sided shapes and three-dimensional objects using appropriate formulas.
- **Grade 9**
E1.3 solve problems involving the side-length relationship for right triangles in real-life situations, including problems that involve composite shapes.



Grade 9

Task: Skate On!

The local arena is made up of 2 congruent trapezoids and 1 square as shown below. Use the measurements to calculate the total area of the arena floor.

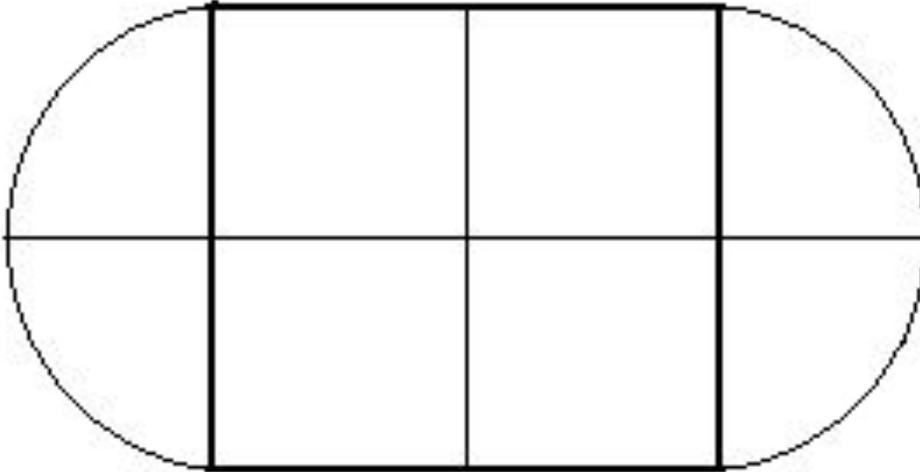


Show your work.

Grade 8

Task: Skate On!

The local arena is made up of 4 squares and 2 semicircles as shown below. Each small square has an area of 4 square meters. Find the total area of the arena floor.

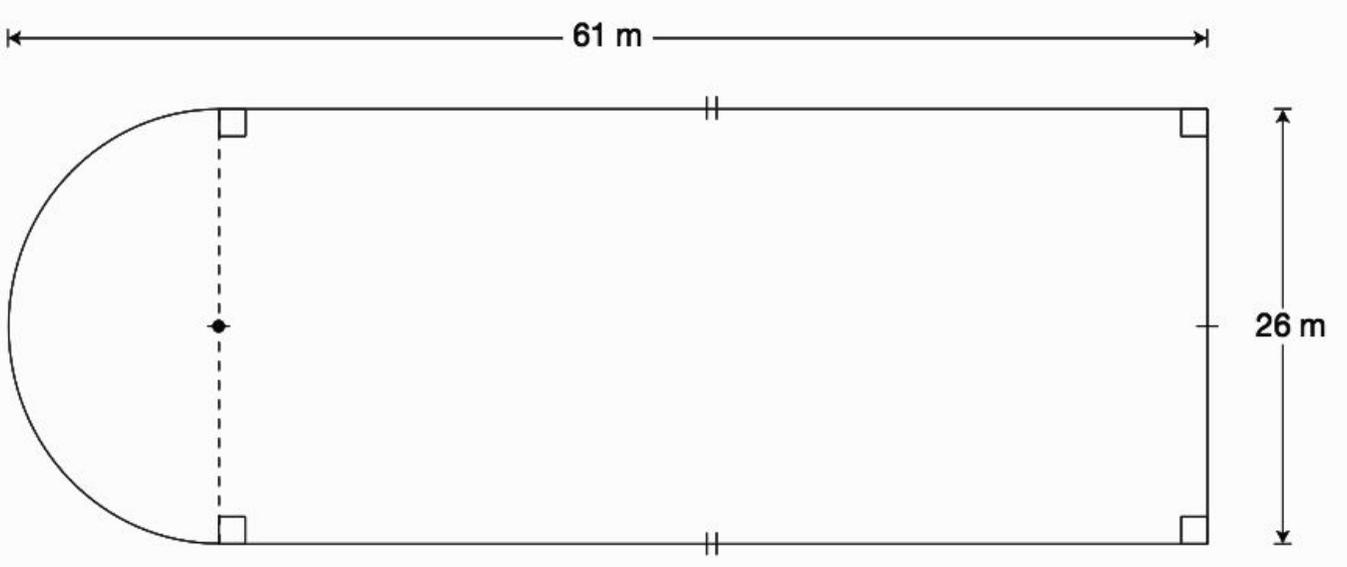


Show your work.

Grade 7

Task: Skate On!

A diagram of a community ice rink is shown below.



The rink is being enclosed with fencing that costs \$6.20/m. Determine the total cost of fencing for the rink.
Show your work.

Task 8: Designing A Flag

Strand: Spatial Sense (7 & 8), Geometry and Measurement (9)

Overall Expectations

- **Grade 7**
E2 compare, estimate, and determine measurements in various contexts
- **Grade 8**
E2 compare, estimate, and determine measurements in various contexts
- **Grade 9**
E1 demonstrate an understanding of the development and use of geometric and measurement relationships, and apply these relationships to solve problems, including problems involving real-life situations.

Specific Expectations

- **Grade 7**
E2.3 show the relationships between the radius, diameter, and area of a circle, and use these relationships to explain the formula for measuring the area of a circle and to solve related problems.
E2.5 use the relationships between the radius, diameter, and circumference of a circle to explain the formula for finding the circumference and to solve related problems.
- **Grade 8**
E2.3 solve problems involving the perimeter, circumference, area, volume and surface area of composite two-dimensional shapes and three-dimensional objects, using appropriate formulas.
- **Grade 9**
E1.3 solve problems involving the side-length relationship for right triangles in real-life situations, including problems that involve composite shapes.

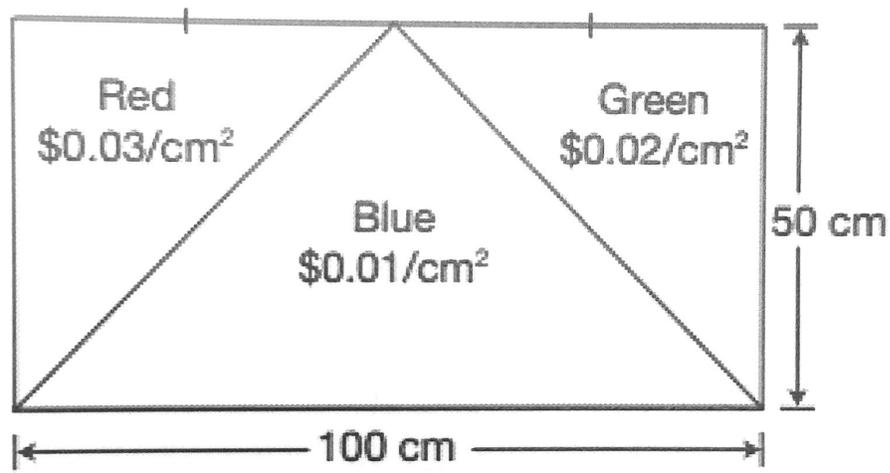


Grade 9

Task: Designing A Flag

Pablo is designing a rectangular flag that consists of three coloured triangles.

The picture below shows the colours of the triangles and the cost of each colour of material.



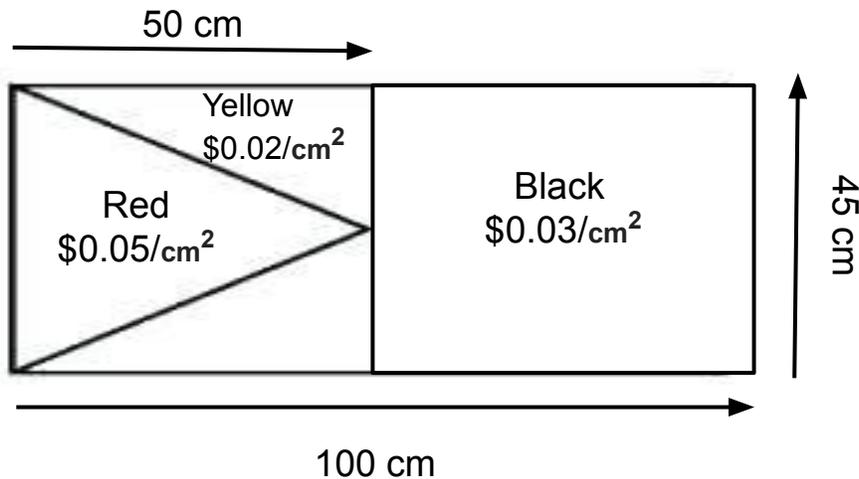
What is the total cost of the material needed to create this design?
Show your work.

Grade 8

Task: Designing A Flag

Pablo is designing a rectangular flag that consists of different shapes and colours.

The picture below shows the colours of each section and the cost of each colour of material



What is the total cost of the material needed to create this design?

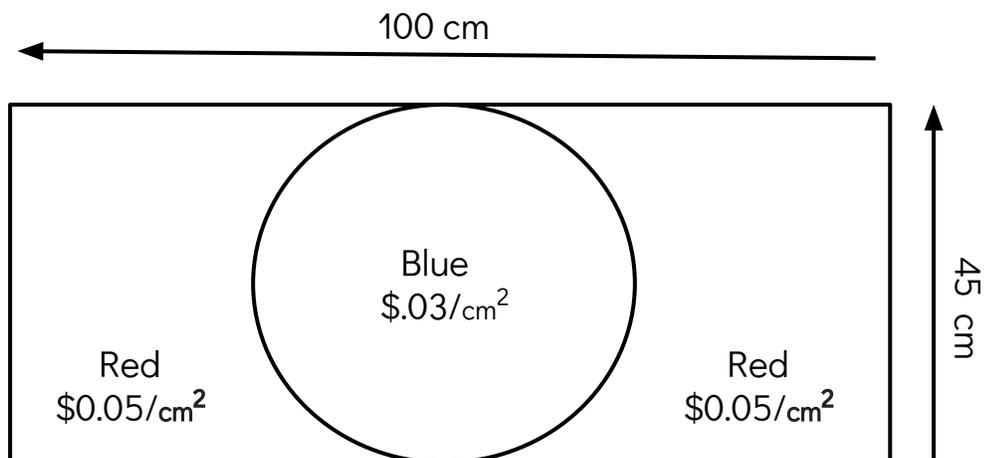
Show your work.

Grade 7

Task: Designing A Flag

Pablo is designing a red rectangular flag that includes a blue centre.

The picture below shows the colours, shapes and cost of each colour of material.



What is the total cost of the material needed to create this design?

Show your work.

Task 9: Six and Five Sides

Strands: Spatial Sense (7 & 8); Geometry & Measurement (9)

Overall Expectations

- **Grade 7**
E1 describe and represent shape, location, and movement by applying geometric properties and spatial relationships in order to navigate the world around them.
- **Grade 8**
E2 compare, estimate, and determine measurements in various contexts
- **Grade 9**
E1 demonstrate an understanding of the development and use of geometric and measurement relationships, and apply these relationships to solve problems, including problems involving real-life situations.

Specific Expectations

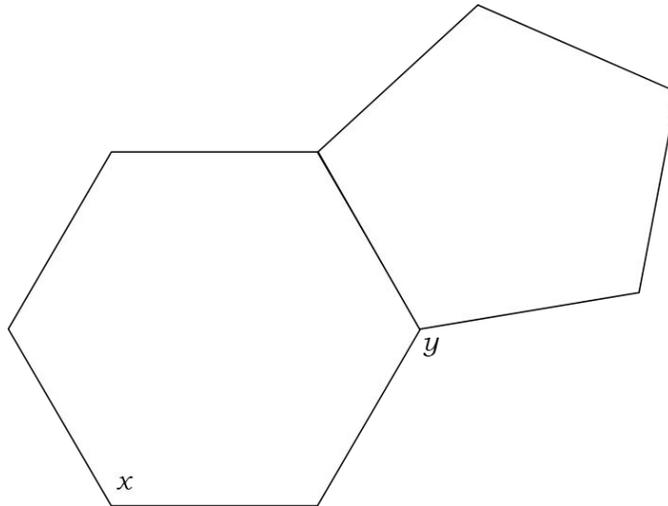
- **Grade 7**
E1.1 describe and classify cylinders, pyramids, and prisms according to their geometric properties, including plane and rotational symmetry.
E1.2 draw top, front, and side views, as well as perspective views, of objects and physical spaces, using appropriate scales.
- **Grade 8**
E2.2 solve problems involving angle properties, including the properties of intersecting and parallel lines and of polygons
E2.3 solve problems involving the perimeter, circumference, area, volume, and surface area of composite two-dimensional shapes and three-dimensional objects, using appropriate formulas
- **Grade 9**
E1.2 create and analyse designs involving geometric relationships and circle and triangle properties, using various tools.
E1.4 show how changing one or more dimensions of a two-dimensional shape and a three-dimensional object affects perimeter/circumference, area, surface area, and volume, using technology when appropriate.
E1.5 solve problems involving the side-length relationship for right triangles in real-life situations, including problems that involve composite shapes



Grade 9

Task: Six and Five Sides

A regular hexagon and a regular pentagon are joined as shown below.



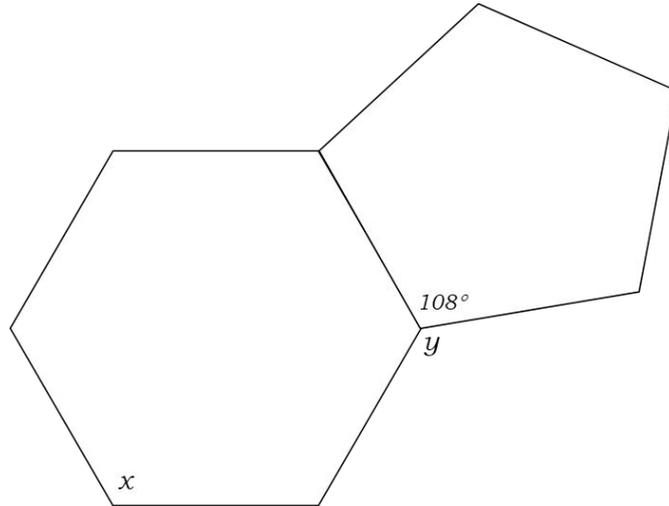
Complete the table below with the values of x and y . Justify your answer using geometric properties.

Value	Justification using geometric properties
$x = \underline{\hspace{2cm}}$	
$y = \underline{\hspace{2cm}}$	

Grade 8

Task: Six and Five Sides

A regular hexagon and a regular pentagon are joined as shown below.



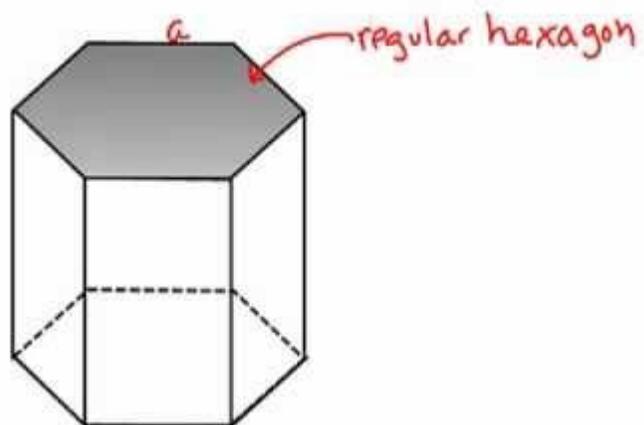
Complete the table below with the values of x and y . Justify your answer using geometric properties.

Value	Justification using geometric properties
$x = \underline{\hspace{2cm}}$	
$y = \underline{\hspace{2cm}}$	

Grade 7

Task: Six and Five Sides

Make/Draw a net for a right prism that has a hexagon for a base.



Watch this helpful [video](#) if you need some guidance.

Draw net here.

Task 10: Gold Ring

Strands: Spatial Sense (7 & 8); Geometry & Measurement (9)

Overall Expectations

- **Grade 7 & 8**
E2 compare, estimate, and determine measurements in various contexts
- **Grade 9**
E1 demonstrate an understanding of the development and use of geometric and measurement relationships, and apply these relationships to solve problems, including problems involving real-life situations

Specific Expectations

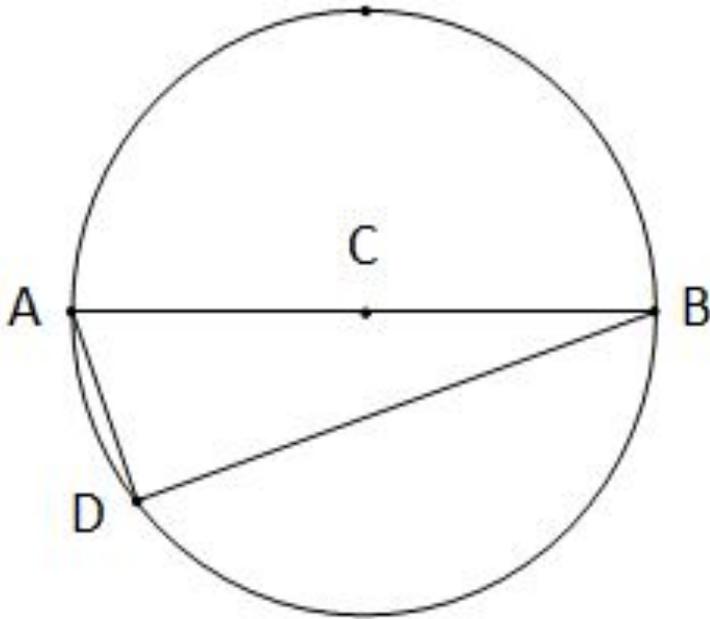
- **Grade 7**
E2.3 use the relationships between the radius, diameter, and circumference of a circle to explain the formula for finding the circumference and to solve related problems
- **Grade 8**
E2.4 describe the Pythagorean relationship using various geometric models, and apply the theorem to solve problems involving an unknown side length for a given right triangle
- **Grade 9**
E1.5 solve problems involving the side-length relationship for right triangles in real-life situations, including problems that involve composite shapes
E1.2 create and analyse designs involving geometric relationships and circle and triangle properties, using various tools



Grade 9

Task: Gold Ring

Point C is the centre of the gold ring below. If line segment AD has a length of 4 cm and line segment DB has a length of 13 cm. What is the circumference of the gold ring?



Did you know?

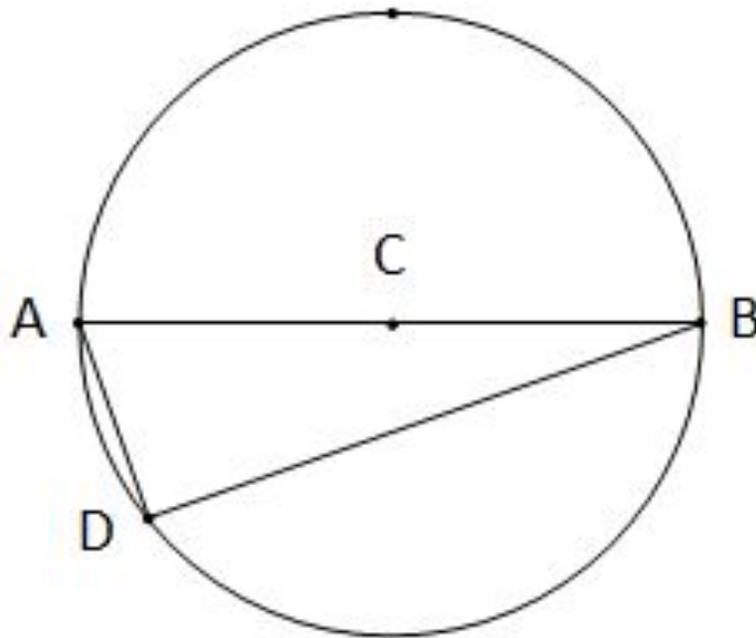
If a triangle is inscribed in a circle such that one side of that triangle is a diameter of the circle, then the angle of the triangle that is opposite the diameter is always a right angle.

Explain your thinking.

Grade 8

Task: Gold Ring

Point C is the centre of the gold ring below and triangle ABD is a right angle triangle inscribed in the ring. If line segment AD has a length of 4 cm and line segment DB has a length 13 cm. What is the length of the radius of the gold ring?



Explain your thinking.

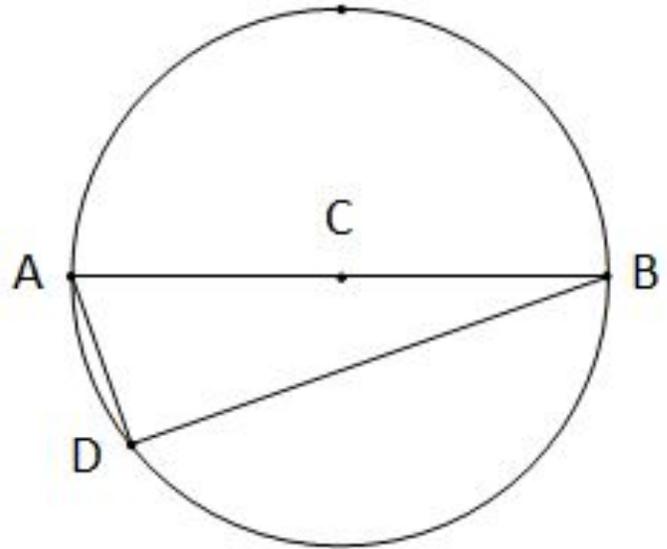
Grade 7

Task: Gold Ring

There is a triangle inscribed in a gold ring as shown below. Point C is the centre of the ring.

Line segment AB has a length of 10 cm.

- What is the diameter of the ring?
- What is the radius of the ring?
- What is the circumference of the ring?



Explain your thinking.

Additional Resources to Support Mathematics Instruction

Key Ministry Resources

[Link to Ontario Math Curriculum](#) - provided by the Government of Ontario

[Sample Tasks from the Ontario Curriculum](#)

[Link to Overview of Math Processes](#) - by EduGains

[Guides to Effective Instruction in Mathematics](#)

[Grade 7-9 Alignment Chart](#)

[Growing Success](#)

[“Yes, I Can”~ Capacity Building Series K-12 \(Jan. 2018\)](#) - provided by the Ministry of Education

[Coding in Elementary- Edugains](#)

EOCCC Mathematics Resources

[M3 Creating a Collaborative Continuum Closing the Gaps in Mathematics for Primary Grades](#)

[M3 Creating a Collaborative Continuum Closing the Gaps in Mathematics for Junior Grades](#)

[EOCCC Math Inquiry Project](#)

[Learning Journeys- Supporting Every Student's Success in Mathematics](#)

Coding Resources

[Global Issues- Code to Learn](#)

[BBC micro:bit](#)

[Scratch \(MIT\)](#)

[Blockly \(Google\)](#)