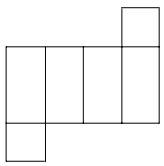
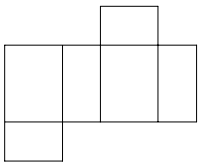
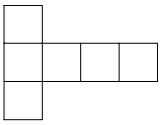
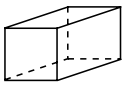
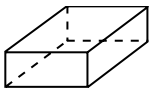
Mental Math

Grade 11 Essential Mathematics (30S)

B–1

Unit B: 3-D Geometry **Specific Learning Outcome: 11.E3.G.1**

General Questions	Answers
1. If 12% of 250 is 30, what is 12% of 500?	60
2. There are 52 cards in a deck, 13 cards of each suit. If the suits are hearts (red), spades (black), clubs (black), and diamonds (red), what percentage of the cards are black?	50%
3. If $x = 2$, evaluate $4x - 18$.	−10
4. You earn \$10 per hour plus 5% commission. If you work 20 hours this week and your sales are \$400, how much will your gross pay be?	\$220
5. There are five people assigned to a group. Sheniqua will not sit beside Arjun and Tapanga. Tapanga refuses to sit beside Soloman. Dejon wants to sit beside Tapanga. If they are sitting in a circle, who will be beside Sheniqua?	Soloman and Dejon
Unit Questions	
For questions 6 to 8, match the 3-D pictures to the following net diagrams. A  B  C 	
6.	C
7. 	A
8. 	B
Other Questions	
9.	
10.	

Mental Math

Grade 11 Essential Mathematics (30S)

B–2

Unit B: 3-D Geometry **Specific Learning Outcome: 11.E3.G.1**

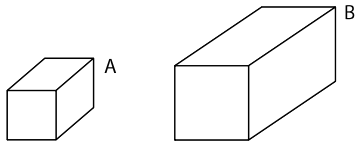
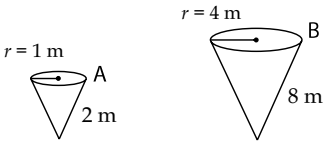
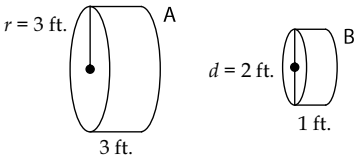
General Questions	Answers
1. Travis invests $1500 for one year. The investment has an annual interest rate of 5%. How much will his investment be worth after one year?	$1575
2. Evaluate: $\frac{4}{8} \times 14$	7
3. Liu and Goh went out for dinner and the total cost of the meal was $28.50, including taxes. Goh pays by leaving $30 on the table to include the tip. How much is the tip?	$1.50
4. Fran has an accuracy rating of 60% in volleyball. Fran's accuracy in basketball is 20% higher than volleyball. In badminton, Fran's accuracy rating is half of his basketball rating. What is Fran's accuracy in badminton?	40%
5. Write two fractions that are equivalent to 0.20.	$\frac{20}{100}, \frac{2}{10}, \frac{1}{5}, \frac{3}{15}$
Unit Questions	
6. If the side value of a cube is 2 m, what is the surface area?	24 m^2
7. Estimate the base area of a cylinder if the diameter of the base is 10 cm.	$\approx$ 75 to 79 cm^2
8. Estimate the surface area of the ends of a cylinder if the radius is 2 inches and the cylinder height is 10 inches.	$\approx$ 24 to 25 $in.^2$
Other Questions	
9.	
10.	

Mental Math

Grade 11 Essential Mathematics (30S)

B–3

Unit B: 3-D Geometry **Specific Learning Outcome: 11.E3.G.3**

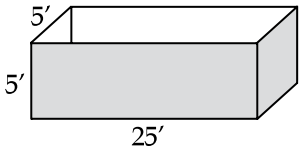
General Questions	Answers
1. Sharmaine has to wake up at 5:00 a.m., and cannot function with less than nine hours of sleep. What is the latest time that Sharmaine should go to bed?	8:00 p.m.
2. A cube has a side length of 5 cm. What is the surface area of the cube?	150 cm^2
3. What is the mean of the following data? 4 6 8 2	5
4. Shannon is four years younger than Cheri. Cheri is double Karl's age. If Karl is 8 years old, how old is Shannon?	12 years old
5. There are five pieces of pepperoni per slice of pizza at Santa Monica's Pizza Parlour. If there are eight slices of pizza, how many pieces of pepperoni are on the whole pizza?.	40
Unit Questions	
6. Find the mistake in the following: Rectangular prism A has a surface area of 40 $yd.^2$. Rectangular prism B has each dimension of prism A × 3, so the surface area is 40 × 3 = 120 $yd.^2$. 	SA is 40 × 9 = 360 $yd.^2$
7. The surface area of cone A is 3π m^2. What is the surface area of cone B? 	3π × 16 = 48π m^2
8. The surface area of cylinder A is 36π $ft.^2$. What is the surface area of cylinder B? 	36π ÷ 9 = 4π $ft.^2$
Other Questions	
9.	
10.	

Mental Math

Grade 11 Essential Mathematics (30S)

B–4

Unit B: 3-D Geometry **Specific Learning Outcome: 11.E3.G.1**

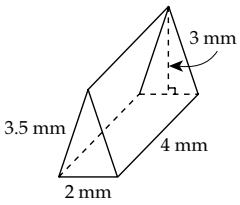
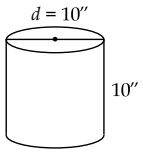
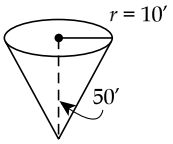
General Questions	Answers
1. You are buying a top for $10.00, a pair of pants for $25.00, and a sweater for $20.00. Everything in the store is 10% off. How much will your bill be before tax?	$49.50
2. A pack of three pens is $10, while a pack of five pens is $15. Which is the better deal?	Pack of 5 pens
3. Jai runs or cycles every day except Friday. If Jai runs on Monday, Wednesday, and Saturday how many days does Jai cycle?	3 days
4. Complete the pattern: 36, 33, 30, _____ , _____	27, 24
5. Solve: $3 - m = 10$	$m = -7$
Unit Questions	
6. Jake wants to paint the outside of a large box with dimensions 5′ × 5′ × 25′. What is the surface area that Jake will paint in square feet? The box does not have a lid. 	425 sq. ft.
7. A can of paint covers about 300 sq. ft. How many cans of paint does Jake need to buy to paint the box?	2
8. Arius bought a new cabinet. The cabinet's dimensions are 30′ × 40′ × 84′. His front door is 32′ × 81′. How can Arius fit the cabinet through his front door?	Sideways: 30′ wide and 40′ high
Other Questions	
9.	
10.	

Mental Math

Grade 11 Essential Mathematics (30S)

B–5

Unit B: 3-D Geometry **Specific Learning Outcome: 11.E3.G.2**

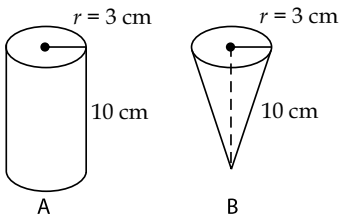
General Questions	Answers
1. Bjork wants to buy a computer that costs $700 before taxes. If Bjork has only $750, will he be able to pay for the computer (taxes = 12% total)?	No
2. Marco is on page 150 of the book he has to read for English class. If the book has 500 pages, how many more pages until he has read half the book?	100
3. Ina is five inches shorter than Ra. If Ra is half a foot taller than Horus, then who is the shortest?	Horus
4. The score with one minute to go in a football game is 28 to 34. What is the minimum number of points the losing team must score in order to win the game?	7
5. Evaluate: $4x - 32$ if $x = 9$	4
Unit Questions	
6. Find the volume of the triangular prism. $\left(V = \frac{1}{2}bh_T \times h\right)$ 	$12\ \text{mm}^3$
7. Estimate the volume of the cylinder. $(V = \pi r^2 \times h)$ 	$\approx$ 750 to 785 in.^3
8. Estimate the volume of the cone. $\left(V = \frac{1}{3}\left(\pi r^2\right) \times h\right)$ 	$\approx$ 5000 to 5300 ft.^3
Other Questions	
9.	
10.	

Mental Math

Grade 11 Essential Mathematics (30S)

B–6

Unit B: 3-D Geometry **Specific Learning Outcomes: 11.E3.G.2/G.3**

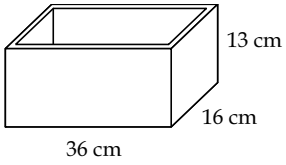
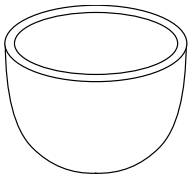
General Questions	Answers
1. Aesir works 25 hours per week and earns $11 per hour. Calculate Aesir's gross pay after two weeks.	$550
2. There are six red, four yellow, four orange, four green, and two purple candies in a package. What percentage of the candies are green?	20%
3. A triangle has an area of 20 m^2. If the base is 10 m, what is the height of the triangle?	4 m
4. After adding 20 songs to your smartphone, you have used up 100 MB (megabytes) of memory. What is the average number of megabytes per song?	5 MB
5. Evaluate: $3 + 5 - (8 \times 3) + 1$	−15
Unit Questions	
6. Find the mistake in the following: The volume of cylinder A is $V = \pi r^2 \times h = \pi 3^2 \times 10 = 90\pi$. Cone B has dimensions that are the same as cylinder A. The cone has 3 times the volume of the cylinder ($90\pi \times 3 = 270\pi$). 	$90\pi \div 3 = 30\pi$
7. A cone and a cylinder have the same dimensions. If the cone has a volume of 47 $in.^3$, what is the volume of the cylinder?	141 $in.^3$
8. A cube has sides measuring 2 cm. A square pyramid has a base length and height of 2 cm. If the cube has a volume of 8 cm^3, what is the volume of the square pyramid? Your answer can be a fraction.	$\frac{8}{3}$ cm^3 or 2.67 cm^3
Other Questions	
9.	
10.	

Mental Math

Grade 11 Essential Mathematics (30S)

B–7

Unit B: 3-D Geometry **Specific Learning Outcome: 11.E3.G.2**

General Questions	Answers
1. What is the mean of the following data? 5 8 2 7 3	5
2. Draco, Dora, and Luna have to share the $750 that their parents gave them for their trip to Europe. If it is split evenly among the three of them, how much will each get?	$250
3. Solve: $4q - 10 = 14$	$q = 6$
4. If 19% of a number is 200, what is 38% of the number?	400
5. The three sides of a right triangle are 3.7, 6.7, and 5.6. What is the length of the hypotenuse?	6.7
Unit Questions	
6. Volume is how much space a container takes up. Capacity is	. . . how much a container can hold.
7. Find the capacity of Jashandeep's toy box in litres. All wood sides are 3 cm thick including the base. (Capacity = *lwh*) Remember: 1000 cm^3 = 1 L. 	3000 cm^3 = 3 L (Measurements lose 3 cm or 6 cm due to wood thickness.)
8. Write the expression for the capacity of the semi-sphere with outside diameter of 7 yd. The thickness is 0.5 yd. 	$\frac{4}{3}\pi(3)^3 \div 2$
Other Questions	
9.	
10.	

Mental Math

Grade 11 Essential Mathematics (30S)

B–8

Unit B: 3-D Geometry **Specific Learning Outcome: 11.E3.G.2**

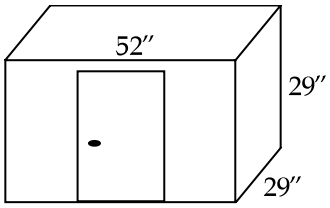
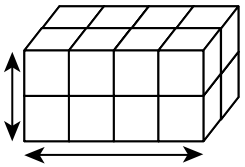
General Questions	Answers
1. How many reflections over the line do you need to return to the original position?	2 (any even number)
2. Solve: $8 - 2k = 2$	$k = 3$
3. The length of a book is $\frac{3}{4}$ of a foot. What is its length in inches?	9 inches
4. You finish school at 3:30 p.m. It takes you 20 minutes to get to work by bus. You work for five hours. You get a ride home, and this takes only 10 minutes. You do homework for an hour before going to bed. At what time do you go to bed?	10:00 p.m.
5. After having your car filled with gas, the total cost was $36.75. You handed the gas jockey $40.00 and asked for a toonie in return. How much did you tip the gas jockey?	$1.25
Unit Questions	
6. What is the formula for calculating the capacity of a cone?	$C = V = \frac{1}{3}(\pi r^2) \times h$
7. A pair of calipers is a tool used for: a) measuring the distance between two opposite sides of one object b) measuring the distance between two different objects	(a)
8. When measuring capacity, do you take outside or inside measurements of the object?	Inside
Other Questions	
9.	
10.	

Mental Math

Grade 11 Essential Mathematics (30S)

B–9

Unit B: 3-D Geometry **Specific Learning Outcomes: 11.E3.G.2/G.3**

General Questions	Answers
1. Complete the pattern: 1, 4, 9, 16, _____ , _____	25, 36
2. At a hockey game, Murphy bought a hot dog for $3.50, a soft drink for $2.75, and some popcorn for $3.25. What is his total before tax?	$9.50
3. Murphy buys snacks for $10.75. He gives the cashier a $20 bill and gets $11 back. How much did the cashier overpay Murphy?	$1.75
4. At Deklin's school, they have 72-minute classes. If Deklin takes math every day this term, how much time will he spend in the math classroom in one week?	6 hours or 360 minutes
5. Solve: $4t - 8 = 0$	$t = 2$
Unit Questions	
6. A hockey puck is 1 inch thick. Carol uses the puck to guess the measurement of her water bottle. What do you call an object such as the hockey puck when it is used to help measure another object?	A referent
7. Ahmed has 16 boxes that measure 1′ × 1′ × 1′. Show how he can fit the boxes in a shed that has 2″ thick walls and ceiling and measures 52″ wide × 29″ deep × 29″ high? (Draw a sketch.) 	 (4 boxes across = 4′ or 48″) (2 boxes high = 2′ or 24″)
8. Correct the mistake in the following work. Calypso buys 500 balls to fill her friend's car as a joke. Each ball has a capacity of about 5 fl. oz. If the car has a capacity of 2500 fl. oz., Calypso has just enough room for the balls because 500 × 5 = 2500 fl. oz.	The balls will have space between them, so she has too many balls.
Other Questions	
9.	
10.	