

Name(s): Key

Learning Goals:

1. I can find perfect squares and square roots using grids and numbers
2. I can estimate the square root of numbers that are not perfect squares
3. I can demonstrate an understanding of percents greater than 0%
4. I can demonstrate an understanding of ratios and rates
5. I can multiply and divide positive fractions and mixed numbers
6. I can multiply and divide positive and negative integers using both tiles and numbers
7. I can graph and analyse two variable linear relations
8. I can solve for X both pictorially using algebra tiles (or balances) as well as numerically
9. I can use the Pythagorean Theorem to solve right triangle problems
10. I can draw and construct nets for 3D objects
11. I can determine surface area for right rectangular prisms, right triangular prisms, and right cylinders
12. I can determine volume for right prisms and right cylinders
13. I can draw the top, front, and side views of 3D objects of right prisms
14. I can critique ways in which data is graphically and statistically presented
15. I can solve probability of independent events
16. I can explain the properties of tessellations

Part 1: I can find perfect squares and square roots using grids and numbers (without a calculator)

Solve for 3^2 $(3)(3) = 9$	Solve $\sqrt{36}$: $\sqrt{36} = 6$
Solve for 13^2 $(13)(13) = 169$	Solve $\sqrt{25}$: $\sqrt{25} = 5$

Part 2: I can estimate the square root of numbers that are not perfect squares (without a calculator)

Estimate for $\sqrt{41}$ $\sqrt{49} = 7$ $\sqrt{36} = 6$ $\sqrt{41} \approx 6.5$	Estimate for $\sqrt{39}$ $\sqrt{36} = 6$ $\sqrt{49} = 7$ $\sqrt{39} \approx 6.2$
Estimate for $\sqrt{19}$ $\sqrt{25} = 5$ $\sqrt{4} = 2$ $\sqrt{19} \approx 4.2$	Estimate for $\sqrt{140}$ $\sqrt{121} = 11$ $\sqrt{144} = 12$ $\sqrt{140} \approx 11.8$
Estimate for $\sqrt{8}$ $\sqrt{4} = 2$ $\sqrt{9} = 3$ $\sqrt{8} \approx 2.9$	Estimate for $\sqrt{98}$ $\sqrt{100} = 10$ $\sqrt{81} = 9$ $\sqrt{98} \approx 9.9$

Part 3: I can demonstrate an understanding of percents greater than 0%

Write 37% as a fraction in lowest terms $\frac{37}{100}$	Write $\frac{1}{7}$ as a percent $\frac{1}{7} = 7 \overline{) 1.000} = .145 = 14.5\%$
Write 110% as a fraction in lowest terms $\frac{110}{100} \div 10 = \frac{11}{10} = 1\frac{1}{10}$	Write $2\frac{1}{4}$ as a percent $2\frac{1}{4} = \frac{9}{4} \times \frac{25}{25} = \frac{225}{100} = 225\%$
What is 120% of 75? $(1.20)(75) = 90$	What is 45% of 80? $(.45)(80) = 36$

Part 4: I can demonstrate an understanding of ratios and rates


Reduce the following ratio 5 red marbles to 10 blue marbles to 15 yellow marbles: $5:10:15 = 1:2:3$	Nester's is selling 10 limes for \$3. What is the unit price per lime? $\frac{\$3}{10 \text{ limes}} = \frac{x}{1 \text{ lime}}$ $\frac{3}{10} = x$ $x = .30$ or 30¢
If the ratio of dogs to horses to cats is 2:3:6, how many dogs are there if there are 9 horses? Dogs: Horses: Cats $2:3:6 = ? : 9 : ?$ $(2)(3) = 6$ Dogs $(6)(3) = 18$ Cats	Nester's is selling grapes for \$3 for 150 grams. IGA is selling grapes for \$4 for 200 grams. Which is a better deal? They are the same. $\frac{\$3}{150g} = \frac{x}{1g}$ $x = \frac{3}{150} = .02 = 2¢$ $\frac{\$4}{200g} = \frac{x}{1g}$ $x = \frac{4}{200} = .02 = 2¢$
Mrs. Becker drives to Omak. It takes her 2.5 hours to drive the 214 Km. If she drove at a consistent speed for the entire trip, what was her rate of travel? $\frac{214 \text{ Km}}{2.5 \text{ hr}} = \frac{x}{1 \text{ hr}}$ $x = \frac{214}{2.5} = 85.6 \text{ Km/hr}$	Which is the better deal...4 pencils for \$3.50 or 10 pencils for \$7.99? $\frac{\$3.50}{4 \text{ pencils}} = \frac{x}{1 \text{ pencil}}$ $x = \frac{3.50}{4} = .875$ or 87.5¢ $\frac{\$7.99}{10 \text{ pencils}} = \frac{x}{1 \text{ pencil}}$ $x = \frac{7.99}{10} = .799$ or 79.9¢ Better deal $\rightarrow .80$ or 80¢

Part 5: I can multiply and divide positive fractions and mixed numbers

$\left(\frac{5}{2}\right)\left(\frac{15}{4}\right) = \frac{75}{8} = 9\frac{3}{8}$	$\left(3\frac{1}{4}\right) \div \left(2\frac{1}{3}\right)$ $\frac{13}{4} \div \frac{7}{3} \rightarrow \left(\frac{13}{4}\right)\left(\frac{3}{7}\right) = \frac{39}{28} = 1\frac{11}{28}$
$\left(\frac{1}{4}\right)\left(\frac{13}{5}\right) = \frac{13}{20}$	$\frac{10}{3} \div \frac{7}{4}$ $\left(\frac{10}{3}\right)\left(\frac{4}{7}\right) = \frac{40}{21} = 1\frac{19}{21}$
$\left(\frac{11}{3}\right)\left(\frac{17}{4}\right) = \frac{187}{12} = 15\frac{7}{12}$	$\frac{9}{4} \div \frac{11}{4}$ $\left(\frac{9}{4}\right)\left(\frac{4}{11}\right) = \frac{9}{11}$

Part 6: I can multiply and divide positive and negative integers using both tiles and numbers

BEDMAS

<p>Solve: $5 - 10 + 3 + 2$</p> $= -5 + 3 + 2$ $= 0$	<p>Solve $6(-3 + 5) - 2(-12 + 3)$</p> $6(2) - 2(-9)$ $12 + 18 = 30$
<p>Using tiles, show the answer to the below question:</p> <p>4 groups of -5 $\Rightarrow -20$</p> 	<p>Solve $3(-7 + 5) - 3(12 + 3)$</p> $3(-2) - 3(15)$ $-6 - 45 = -51$
<p>Using tiles, show the answer to the below question:</p> $3(9 + 3) - 4(8 - 12)$ $3(12) - 4(-4)$ $36 + 16 = 52$	<p>Solve $6(-3 + 5 - 12 + 3)$</p> $6(-7) = -42$
<p>Solve: $2(10 + 3) - (5 - 1)$</p> $2(13) - 1(4)$ $26 - 4 = 22$	<p>Solve $(-4 + 7)(-6 + 3)$</p> $(3)(-3) = -9$

Part 7: I can graph and analyse two variable linear relations

Fill in the missing parts of the below table of values:

$$y = 5(-5) - 2$$

$$= -25 - 2$$

$$= -27$$

$$y = 5(0) - 2$$

$$= 0 - 2$$

$$= -2$$

$$y = 5(3) - 2$$

$$= 15 - 2$$

$$= 13$$

$y = 5x - 2$

X	Y
-5	-27
0	-2
3	13

Fill in the missing parts of the below table of values:

$y = 2x + 2$

X	Y
-3	-4
1	4
2	6

$$y = 2(-3) + 2$$

$$= -6 + 2$$

$$= -4$$

$$y = 2(1) + 2$$

$$= 2 + 2$$

$$= 4$$

$$y = 2(2) + 2$$

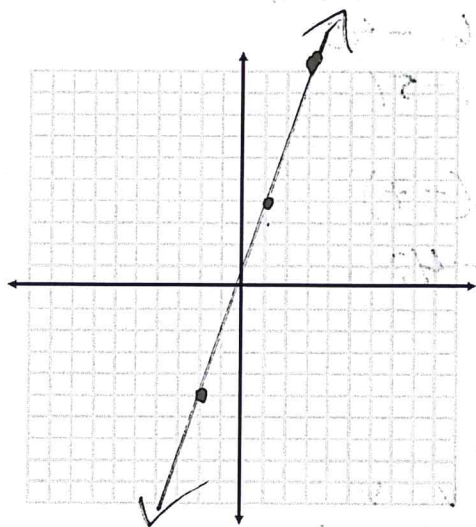
$$= 4 + 2$$

$$= 6$$

Is this a linear equation? **Yes**

Graph the below equation: $y = 3x + 1$

X	Y
-2	-5
1	4
3	10



need arrows

Rearrange the below equation into the proper format for equation of a line.

$y =$ _____

$$4x + 3y = 12 - 4x$$

$$+4x$$

$$3y = \frac{12 - 4x}{3}$$

$$y = \frac{12 - 4x}{3}$$

$$y = -4x + 12$$

Part 8: I can solve for X both pictorially using algebra tiles (or balances) as well as numerically

Using algebra tiles or balancing of equation, show how you would solve for x:

$$2x - 1 = 19$$

Solve: $2(8x + 1) = 3$

Part 8: I can solve for X both pictorially using algebra tiles (or balances) as well as numerically

Using algebra tiles or balances, show how you would solve for X: $2x - 1 = 19$

$2x - 1 = 19$

$x = 10$

Solve: $2(8x + 1) = 3$

$$16x + \frac{2}{-2} = \frac{3}{-2}$$

$$\frac{16x}{16} = \frac{1}{16}$$

$x = \frac{1}{16}$

Using algebra tiles or balances, show how you would solve for X: $4x + 3 = 15$

$$4x + \frac{3}{-3} = \frac{15}{-3}$$

$$\frac{4x}{4} = \frac{12}{4}$$

$x = 3$

Solve: $\frac{1}{2}(x + 1) = 3$

$$\frac{1}{2}x + \frac{1}{-2} = 3 - \frac{1}{2}$$

$$\left(\frac{2}{1}\right) \frac{1}{2}x = 2\frac{1}{2} \left(\frac{2}{1}\right)$$

$$x = (2\frac{1}{2}) \left(\frac{2}{1}\right)$$

$$= \left(\frac{5}{2}\right) \left(\frac{2}{1}\right)$$

Solve: $\frac{2}{3}x - 4 = \frac{1}{3}x + 3$

*This is hard

Solve: $\frac{2}{3}x - 4 = 5$

$$\frac{2}{3}x - \frac{1}{3}x - 4 = 3$$

$$\frac{1}{3}x - \frac{4}{+4} = 3 + 4$$

$$\left(\frac{3}{1}\right) \frac{1}{3}x = 7 \left(\frac{3}{1}\right)$$

$x = 21$

$$\frac{2}{3}x - \frac{4}{+4} = 5 + 4$$

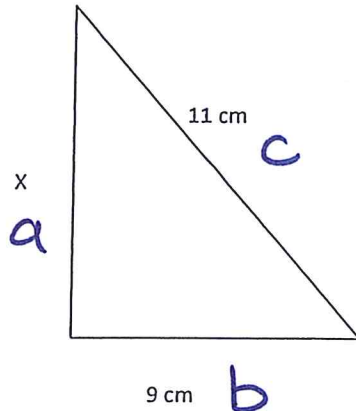
$$\left(\frac{3}{2}\right) \frac{2}{3}x = \frac{9}{1} \left(\frac{3}{2}\right)$$

$$x = \frac{27}{2}$$

$= 13\frac{1}{2}$

Part 9: I can use the Pythagorean Theorem to solve right triangle problems

Solve for the unknown side:



$$a^2 + b^2 = c^2$$

$$a^2 = c^2 - b^2$$

$$a^2 = 11^2 - 9^2$$

$$= 121 - 81$$

$$= 40$$

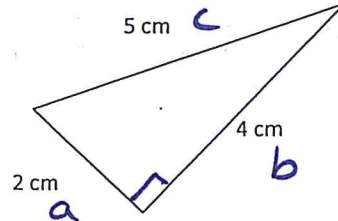
$$a^2 = 40$$

$$a = \sqrt{40}$$

or

$$a \approx 6.5$$

Is this a right triangle? Why or why not?



$$a^2 + b^2 = c^2$$

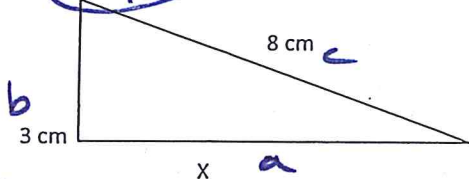
$$2^2 + 4^2 = 5^2$$

$$4 + 16 = 25$$

$$20 \neq 25$$

No, because $20 \neq 25$

Solve for the unknown side:



$$a^2 + b^2 = c^2$$

$$a^2 = c^2 - b^2$$

$$a^2 = 8^2 - 3^2$$

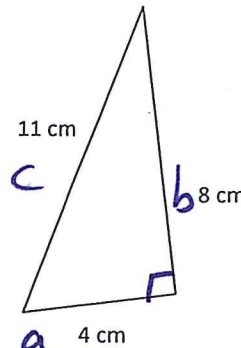
$$a^2 = 64 - 9$$

$$a^2 = 55$$

$$a = \sqrt{55}$$

$$a \approx 7.5$$

Is this a right triangle? Why or why not?



$$a^2 + b^2 = c^2$$

$$4^2 + 8^2 = 11^2$$

$$16 + 64 = 121$$

$$80 \neq 121$$

No, because $80 \neq 121$

Colby is hiking up Cartwright Mountain. James left him a map. He is supposed to hike 5 Km east from his starting spot, and then hike 8 Km north. Colby decided that hiking along the hypotenuse would be faster. Is it? Why or why not?



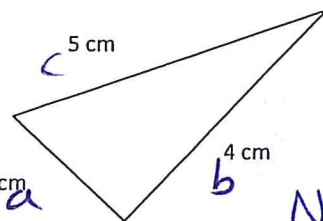
$$5^2 + 8^2 = c^2$$

$$25 + 64 = c^2$$

$$89 = c^2$$

$$c = \sqrt{89}$$

Is this a right triangle? Why or why not?



$$2^2 + 4^2 = 5^2$$

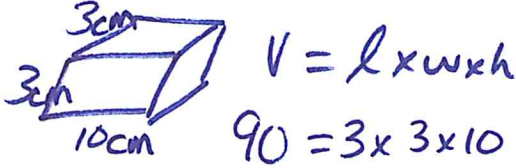
$$4 + 16 = 25$$

$$20 \neq 25$$

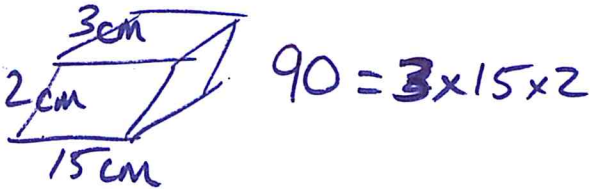
No

Part 10: I can draw and construct nets for 3D objects

Draw a net for a right rectangular prism that would have volume of 90 cm^3 . Include dimensions on your net diagram.



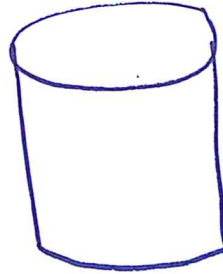
or



Many answers, but all 3 dimensions need to multiply to 90.

Draw a net for a cylinder that would have volume of 90 cm^3 . Include dimensions on your net diagram. ~~12.56~~ cm^3

This is difficult



Answer will vary

$$V = \pi r^2 \times h$$

$$90 = 3.14 \times 2^2 \times h$$

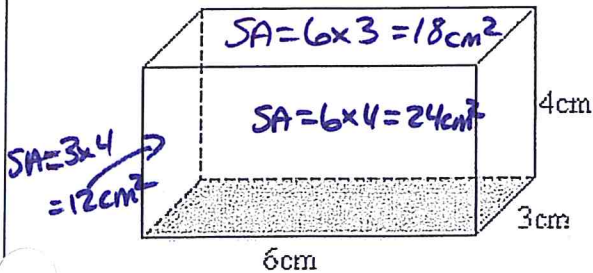
$$90 = 3.14 \times 4 \times h$$

$$\frac{90}{3.14 \times 4} = h$$

$$7.2 \text{ cm} = h$$

Part 11: I can determine surface area for right rectangular prisms, right triangular prisms, and right cylinders

What is the *surface area* of the below shape?

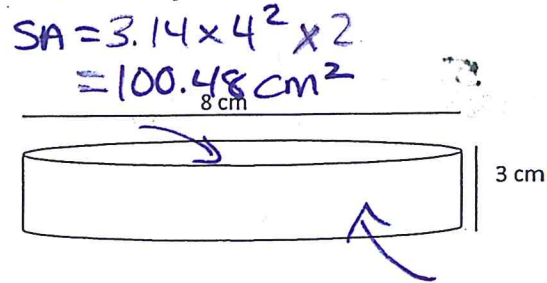


$$SA = 2(18 \text{ cm}^2) + 2(24 \text{ cm}^2) + 2(12 \text{ cm}^2)$$

$$= 54 \text{ cm}^2 + 48 \text{ cm}^2 + 24 \text{ cm}^2$$

$$= 108 \text{ cm}^2$$

What is the *surface area* of the below shape?



$$SA = 3.14 \times 4^2 \times 2$$

$$= 100.48 \text{ cm}^2$$

$$SA = \pi d h$$

$$= 3.14 \times 8 \times 3$$

$$= 75.36 \text{ cm}^2$$

$$SA = 100.48 + 75.36$$

$$= 175.84 \text{ cm}^2$$

What is the surface area of the below shape?

$$SA = 100 + 100 + 500$$

$$= 700 \text{ cm}^2$$

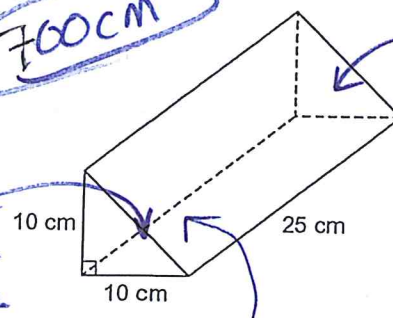
$$10^2 + 10^2 = c^2$$

$$100 + 100 = c^2$$

$$200 = c^2$$

$$\sqrt{200} = c$$

$$14.1 = c$$



$$SA = \frac{b \times h}{2} = \frac{10 \times 10}{2}$$

$$= \frac{100}{2}$$

$$= 50 \text{ cm}^2$$

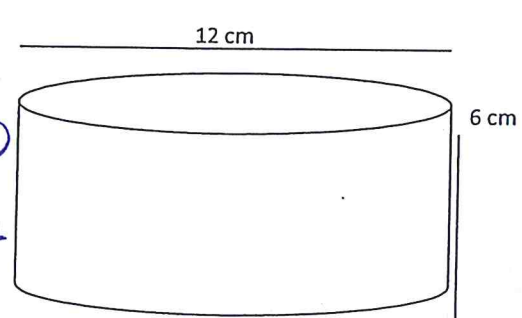
$$\times 2$$

$$= 100 \text{ cm}^2$$

$$SA = 10 \times 25 = 250 \text{ cm}^2 \times 2 = 500 \text{ cm}^2$$

$$SA = 10 \times 10 = 100 \text{ cm}^2$$

What is the surface area of the below shape?



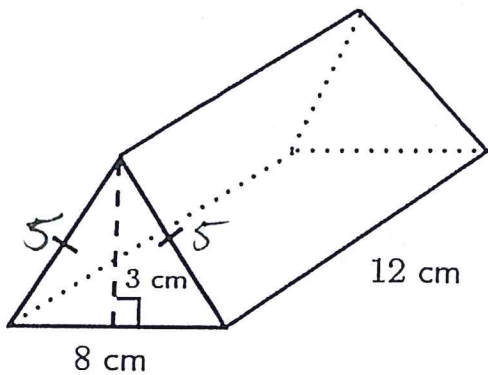
$$SA = 2\pi r^2 + \pi dh$$

$$= (3.14 \times 6^2) + (3.14 \times 12 \times 6)$$

$$= 226.08 + 226.08$$

$$= 452.16 \text{ cm}^2$$

What is the surface area of the below shape?



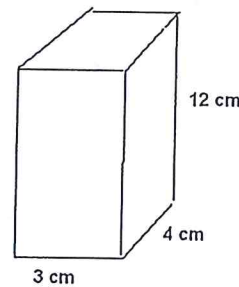
$$SA_{\Delta} = \frac{8 \times 3}{2} = \frac{24}{2} \times 2 = 24 \text{ cm}^2$$

$$SA_{\square} = 12 \times 5 \times 2 = 120 \text{ cm}^2$$

$$SA_{\square} = 12 \times 8 = 96 \text{ cm}^2$$

$$SA = 24 + 120 + 96 = 240 \text{ cm}^2$$

What is the surface area of the below shape?



$$SA = 3 \times 4 = 12 \times 2 = 24 \text{ cm}^2$$

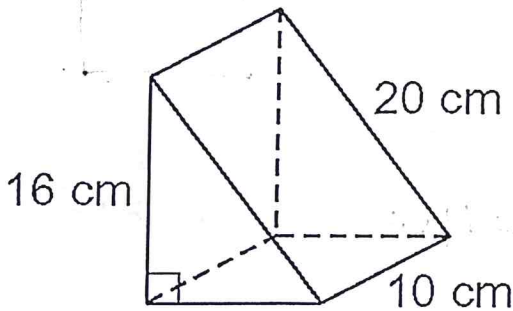
$$SA = 3 \times 12 = 36 \times 2 = 72 \text{ cm}^2$$

$$SA = 4 \times 12 = 48 \times 2 = 96 \text{ cm}^2$$

$$SA = 24 + 72 + 96 = 192 \text{ cm}^2$$

Part 12: I can determine volume for right prisms and right cylinders

What is the *volume* of the below shape?

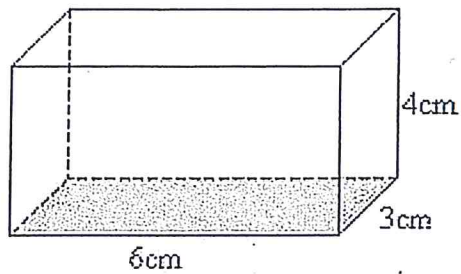


$$V = \frac{1}{2} \times 12 \times 10 \times 20$$

$$= 1920 \text{ cm}^3$$

$$= 960 \text{ cm}^3$$

What is the *volume* of the below shape?

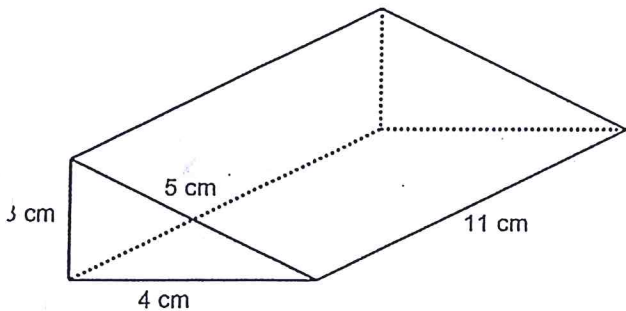


$$V = l \times w \times h$$

$$= 6 \times 3 \times 4$$

$$= 72 \text{ cm}^3$$

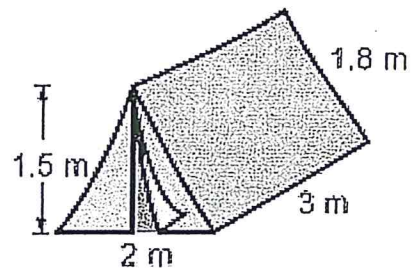
What is the *volume* of the below shape?



$$V = \frac{4 \times 3}{2} \times 11$$

$$= 66 \text{ cm}^3$$

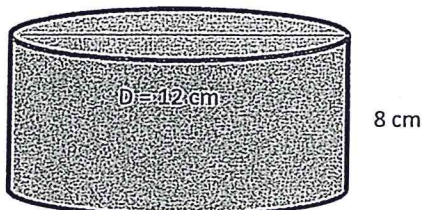
What is the *volume* of the below shape?



$$V = \frac{2 \times 1.5}{2} \times 3$$

$$= 4.5 \text{ m}^3$$

What is the *volume* of the below shape?

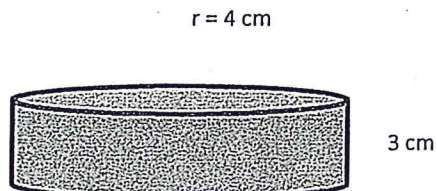


$$V = \pi r^2 \times h$$

$$= 3.14 \times 6^2 \times 8$$

$$= 904.32 \text{ cm}^3$$

What is the *volume* of the below shape?

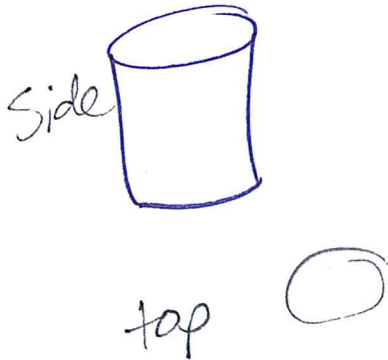



$$V = 3.14 \times 2^2 \times 3$$

$$= 37.68 \text{ cm}^3$$

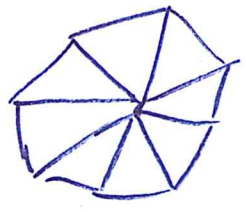
Part 13: I can draw the top, front, and side views of 3D objects of right prisms

Answers will vary

<p>Draw the top view of a cylinder</p> 	<p>Draw the top view of a rectangular prism that has an area of 20 cm^2</p>  <p>$A = l \times w = 4 \times 5$ Different answers $V = l \times w \times h$ $= 4 \times 5 \times h$ or $= 2 \times 2 \times 5$</p>
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Part 14: I can explain the properties of tessellations

Describe the steps to make a tessellation. Draw an example of one.



repeating same shape

Part 15: I can critique ways in which data is graphically and statistically presented

You have collected data on the on middle school student's favourite courses. You want to show it in percent of stu

1. pie chart
2. line graph
3. bar graph
4. data table

Because:

best to show %

Why do you use a graph?

visual representation

What information should be in a graph?

title data points
units average data
axis

Part 16: I can solve probability of independent events

In a standard deck of cards, which is the probability that when you take a card, you will get a heart?

$$\frac{13}{52}$$

You have two six sided dice. When you roll both independently, what is the probability that you will get a 4 and a 5?

$$\frac{1}{6} \times \frac{1}{6} = \frac{1}{36}$$

A coin is tossed and a single 6-sided die is rolled. Find the probability of landing on the head side of the coin and rolling a 3 on the die.

$$\frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$$

A card is chosen at random from a deck of 52 cards. It is then replaced and a second card is chosen. What is the probability of choosing a jack and then an eight?

$$\frac{4}{52} \times \frac{4}{52} = \frac{1}{676}$$

A jar contains 6 red balls, 3 green balls, 5 white balls, and 7 yellow balls. Two balls are chosen from the jar, with replacement. What is the probability that both balls chosen are green?

$$\frac{3}{21} \times \frac{3}{21} = \frac{9}{441} = \frac{3}{147} = \frac{1}{49}$$

A nationwide survey showed that 65% of all children in the United States dislike eating vegetables. If 4 children are chosen at random, what is the probability that all 4 dislike eating vegetables? (Round your answer to the nearest percent.)

$$.65 \times 4 = 2.60$$

or 3

