ALBERTA DISTANCE LEARNING CENTRE
Mathematics 10C
MAT1791
Workbook 2.1

Student's Questions and Comments

FOR STUDENT USE ONLY

Student Name:

_____

FOR ADLC USE ONLY

Assigned to

_____

Marked by

_____

Date received

_____

Summary

	Marks Earned	Total Possible Marks	Percent
2.1 Practice – I	**I have ____ /8 and ____ %.**		
2.1 Practice – II	**I have ____ /8 and ____ %.**		
Lesson 2.1 Assignment		26	

Teacher's Comments:

_____

Teacher's Signature

REVISED February 2019

CANADIAN CATALOGUING IN PUBLICATION DATA

MAT1791
Mathematics 10C
ISBN: 978-1-927090-75-6
Workbook 2.1

4601 - 63 Avenue
Barrhead, Alberta Canada T7N 1P4

Printed in Canada

Alberta Distance Learning Centre website:

http://www.adlc.ca

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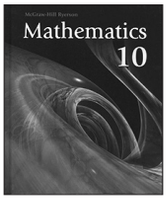

Mathematics 10

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Practice Assessment

The *Practice* section provides exercise questions and allows you to self-reflect on your conceptual understanding of the *Lesson* skills. You will mark your *Practice* work in each *Workbook* according to the following rubric.

Category	Strategy and Procedures	Response to Questions
	I have…	*I have…*
4	• used efficient and effective strategies to solve the problem(s)	• provided detailed explanations and followed directions appropriately to complete all questions
3	• used effective strategies to solve the problem(s)	• provided clear explanations and followed directions adequately to complete most questions
2	• used effective strategies inconsistently to solve the problem(s)	• provided incomplete explanations and followed some directions to complete a few questions
1	• used ineffective strategies to solve the problem(s)	• provided incomplete explanations and have not followed directions to complete some questions

Complete *Practice* exercises using your best work, showing all relevant steps needed to arrive at your solution. Refer to the *Module* to review lesson instructions. Contact your teacher for assistance or clarification as needed, or to investigate the topic further.

Check and correct your work using the solutions provided in *Appendix* in the *Module*.

Practice is worth 8 marks.

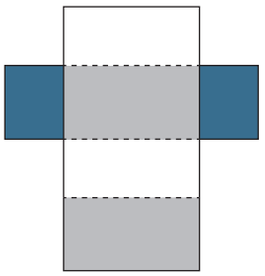
After you have assessed your work, reflect on your understanding of the concepts in the table provided at the end of each *Practice* section.

Lesson 2.1: Surface Area of 3-D Objects

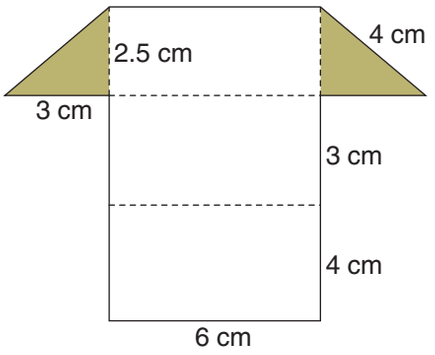
Complete the *Practice* below. When you have completed all the questions for *Lesson 2.1 Practice – I* with your best work, mark your work by first comparing your answers to the solutions provided in the *Appendix*. Then, apply the rubric found at the beginning of the *Workbook*.

Practice – I

1. Below is the net for a rectangular prism. Sketch another net that represents the same rectangular prism when folded along its dotted lines.



2. Determine the surface area, to the nearest tenth, of the following triangular prism.



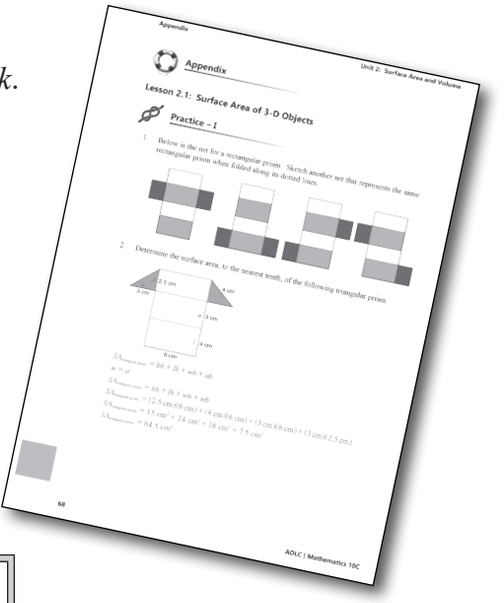
3. What is the difference in surface area, to the nearest square foot, between a 45 foot long semi-trailer (trailer only) and a 28 foot long cube van (storage compartment only)?

	Length	Width	Height
28 foot Cube Van	28 feet	102 inches	13 feet, 6 inches
45 foot Semi-Trailer	45 feet	102 inches	13 feet, 6 inches

Mark your work for *Lesson 2.1 Practice – I* using the solutions provided in the *Appendix*. Then, apply the rubric found at the beginning of the *Workbook*.

Transfer your self-assessed mark to the front cover of the *Workbook*.

My self-assessed mark on *Lesson 2.1 Practice – I* is _____.


Appendix

Unit 2: Surface Area and Volume

Appendix

Lesson 2.1: Surface Area of 3-D Objects

Practice – I

1. Below is the net for a rectangular prism. Sketch another net that represents the same rectangular prism when folded along its dotted lines.

2. Determine the surface area, to the nearest tenth, of the following triangular prism.

2.5 cm
8 cm
4 cm
w
3 cm
4 cm
6 cm

$SA_{triangular\ prism} = bh + lh + wh + wb$

$w = a$

$SA_{triangular\ prism} = bh + lh + wh + wb$

$SA_{triangular\ prism} = (2.5\ cm)(6\ cm) + (4\ cm)(6\ cm) + (3\ cm)(6\ cm) + (3\ cm)(2.5\ cm)$

$SA_{triangular\ prism} = 15\ cm^2 + 24\ cm^2 + 18\ cm^2 + 7.5\ cm^2$

$SA_{triangular\ prism} = 64.5\ cm^2$

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Reflect on your understanding of the concepts addressed in the *Practice* exercises in the table provided.

Question Number	Got it!	Almost there…	Need to retry or ask for help.
1			
2			
3			

Please return to *Lesson 2.1* to continue your work in *Unit 2: Surface Area and Volume*.

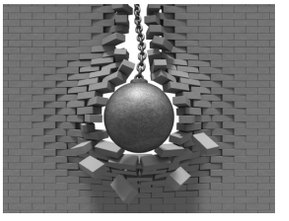
Lesson 2.1: Surface Area of 3-D Objects

Complete the *Practice* below. When you have completed all the questions for *Lesson 2.1 Practice – II* with your best work, mark your work by first comparing your answers to the solutions provided in the *Appendix*. Then, apply the rubric found at the beginning of the *Workbook*.

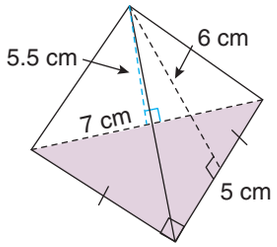
Practice – II

1. The soup can shown is a perfect storage container for a set of coloured pens, each 15 cm in length. The radius of the can's base is 4 cm. The surface area of the soup can is 406.8 cm^2. Is the can tall enough to fit the pens with the lid on?

2. A 4 000 pound wrecking ball has a surface area of 2 642.01 in^2. Determine the diameter of the wrecking ball to the nearest inch.



3. The following diagram is a tetrahedron. Sketch and label its net and determine its surface area, to the nearest hundredth.



4. An ice cream cone with a radius of 3.25 cm and a height of 15 cm has a scoop of ice cream sitting on it.

   a. If the visible portion of the ice cream scoop is a hemisphere, sketch and label a diagram using the measurements provided.

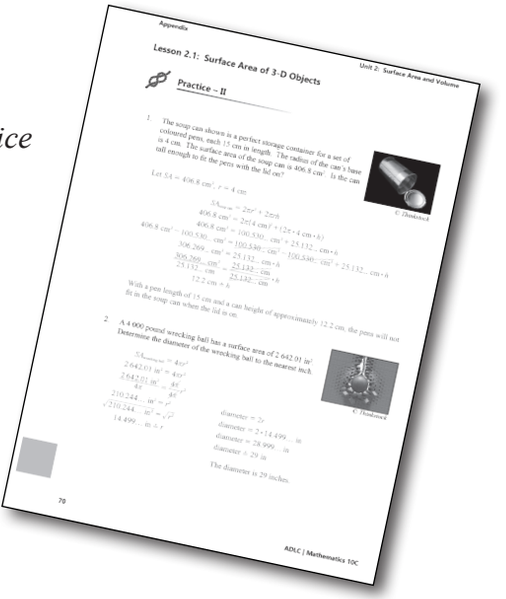
   b. Explain how you would determine the surface area of the ice cream cone and scoop.

Mark your work for *Lesson 2.1 Practice – II* using the solutions provided in the *Appendix*. Then, apply the rubric found at the beginning of the *Workbook*.

Transfer your self-assessed mark to the front cover of the *Workbook*.

My self-assessed mark on *Lesson 2.1 Practice – II* is _____.

Reflect on your understanding of the concepts addressed in the *Practice* exercises in the table provided.


Appendix

Lesson 2.1: Surface Area of 3-D Objects

Unit 2: Surface Area and Volume

Practice – II

1. The soup can shown is a perfect storage container for a set of coloured pens, each 15 cm in length. The radius of the can's base is 4 cm. The surface area of the soup can is 406.8 cm^2. Is the can tall enough to fit the pens with the lid on?

Let $SA = 406.8\ cm^2$, $r = 4$ cm

$SA_{cylinder} = 2\pi r^2 + 2\pi rh$

$406.8\ cm^2 = 2\pi(4\ cm)^2 + (2\pi \cdot 4\ cm \cdot h)$

$406.8\ cm^2 - 100.530...\ cm^2 = 100.530...\ cm^2 + 25.132...\ cm \cdot h$

$306.269...\ cm^2 = 25.132...\ cm \cdot h$

$\frac{306.269...\ cm^2}{25.132...\ cm} = \frac{25.132...\ cm}{25.132...\ cm} \cdot h$

$12.2\ cm = h$

With a pen length of 15 cm and a can height of approximately 12.2 cm, the pens will not fit in the soup can when the lid is on.

2. A 4 000 pound wrecking ball has a surface area of 2 642.01 in^2. Determine the diameter of the wrecking ball to the nearest inch.

$SA_{sphere} = 4\pi r^2$

$2\,642.01\ in^2 = 4\pi r^2$

$\frac{2\,642.01\ in^2}{4\pi} = \frac{4\pi r^2}{4\pi}$

$210.244...\ in^2 = r^2$

$\sqrt{210.244...\ in^2} = \sqrt{r^2}$

$14.499...\ in = r$

diameter $= 2r$

diameter $= 2 \cdot 14.499...\ in$

diameter $= 28.999...\ in$

diameter $= 29$ in

The diameter is 29 inches.

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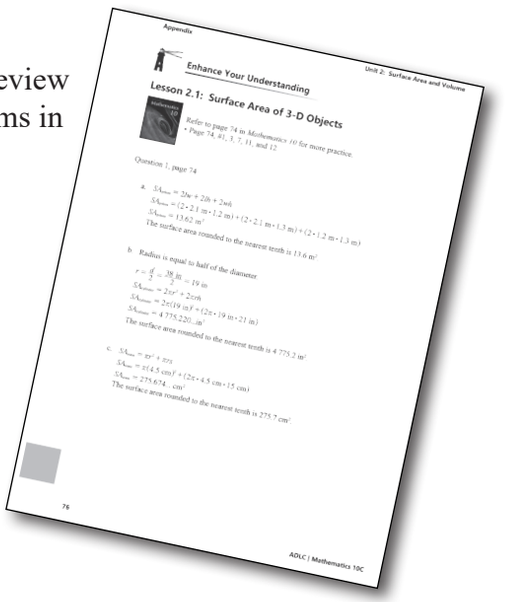
Question Number	Got it!	Almost there…	Need to retry or ask for help.
1			
2			
3			
4			

You may proceed to *Explore Your Understanding Assignment* on the next page of this *Workbook*.

Note: Before you complete *Explore Your Understanding*, you may review your skills and get more practice by completing the following problems in *Mathematics 10*.

- Page 74, #1, 3, 7, 11, and 12

Check your work in *Enhance Your Understanding*.


Appendix

Enhance Your Understanding

Unit 2: Surface Area and Volume

Lesson 2.1: Surface Area of 3-D Objects

Refer to page 74 in *Mathematics 10* for more practice.
- Page 74, #1, 3, 7, 11, and 12

Question 1, page 74

a. $SA_{cube} = 2lw + 2lh + 2wh$

$SA_{cube} = (2 \cdot 2.1\ m \cdot 1.2\ m) + (2 \cdot 2.1\ m \cdot 1.3\ m) + (2 \cdot 1.2\ m \cdot 1.3\ m)$

$SA_{cube} = 13.62\ m^2$

The surface area rounded to the nearest tenth is 13.6 m^2

b. Radius is equal to half of the diameter.

$r = \frac{d}{2} = \frac{38\ in}{2} = 19\ in$

$SA_{cylinder} = 2\pi r^2 + 2\pi rh$

$SA_{cylinder} = 2\pi(19\ in)^2 + (2\pi \cdot 19\ in \cdot 21\ in)$

$SA_{cylinder} = 4\,775.220...\ in^2$

The surface area rounded to the nearest tenth is 4 775.2 in^2

c. $SA_{cone} = \pi r^2 + \pi rs$

$SA_{cone} = \pi(4.5\ cm)^2 + (2\pi \cdot 4.5\ cm \cdot 15\ cm)$

$SA_{cone} = 275.674...\ cm^2$

The surface area rounded to the nearest tenth is 275.7 cm^2

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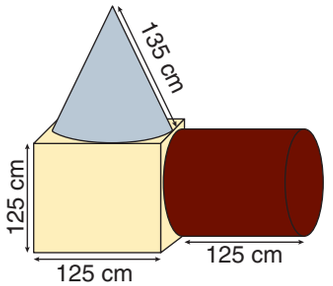
Lesson 2.1: Surface Area of 3-D Objects

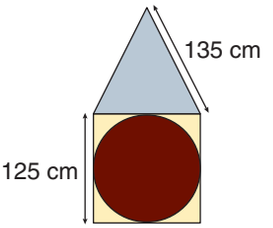
Explore Your Understanding Assignment

1. A playground apparatus is assembled by putting together three solid shapes: a cube, a cone and a cylinder.

Front View:



Right Side View:



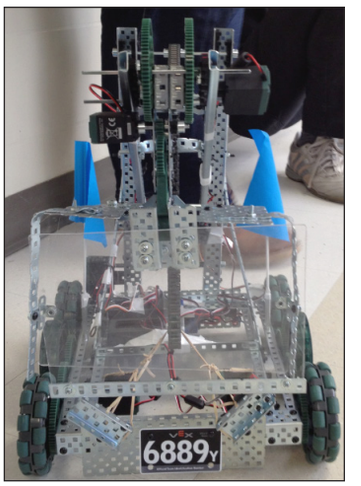
(3) a. Draw the nets for each shape (cube, cone, and cylinder) individually, labeling the measurements on the nets.

(9) b. Determine the surface area of each of the three parts of the apparatus before they are assembled into the playground. Round each answer to the nearest hundredth.

(2) c. Is there a more appropriate SI unit of measure for the surface area of the playground equipment? Explain.

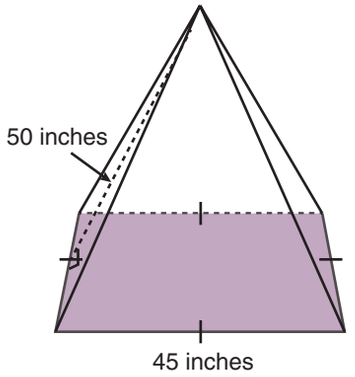
(1) d. What would be a more appropriate imperial unit of measure for the surface area of this playground equipment?

(4) 2. In a robotics competition, a robot must be built with a specific maximum starting height, width, and depth. In order to meet the height requirements, a robot must fit in the judge's plexi-glass box. The box is a rectangular prism that has a surface area of 1 728 in^2, a width of 15 inches, and a length of 18 inches. The Mad Hatter robot is 17.75 inches tall in its starting position. Does the Mad Hatter meet the height requirement?



Courtesy of Phoebe Arcilla

(2) 3. Determine the surface area of the square pyramid, to the nearest square inch.



4. A right square pyramid has a surface area of 50.75 square inches and a base length of 3.5 inches.

(2) a. Sketch and label a diagram of the pyramid.

(3) b. Calculate the slant height of the pyramid, to the nearest tenth.

/26