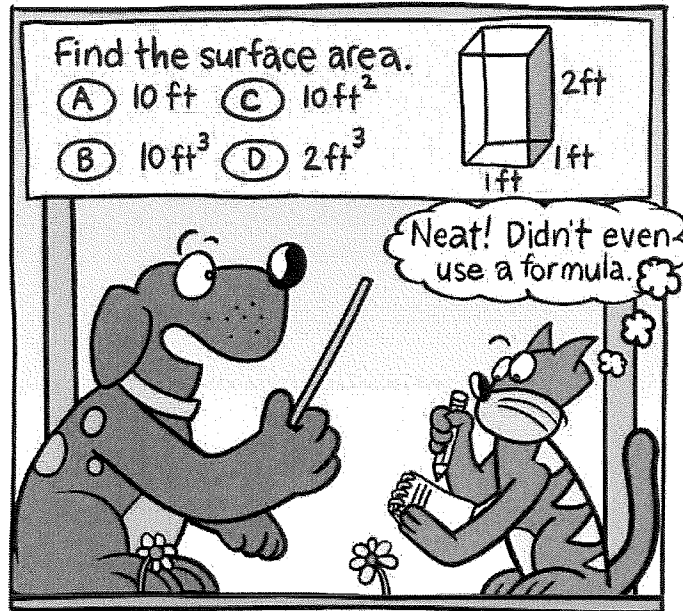


Chapter 5: Surface Area



"Scan the test and answer the easy questions first. You know area is measured in square units."

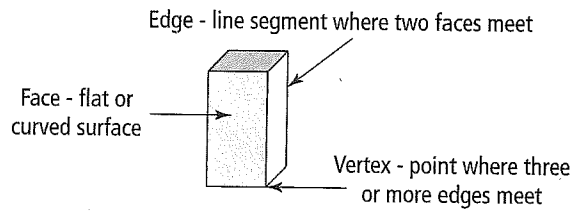
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This package belongs to

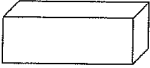
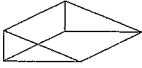

Chapter 5			
Math 8 A Dates	Math 8 B Dates	Lesson Topic	Homework
		Do it together: Get Ready Chapter 5 (Page 3-4) & Lesson 5.1 (Page 5-6)	
Next Class...			
		Lesson 5.2 (Page 7-8)	Worksheet 5.2 (Page 9-10) Optional: Textbook P. 174 # 8, 9, 12, 13
Next Class...			
		Lesson 5.3 (Page 11-12)	Worksheet 5.3 (Page 14-15) Optional: Textbook P. 180 # 8, 10, 12, 13, 15
Next Class...			
		Lesson 5.4 (Page 16-17)	Worksheet 5.4 (Page 18-19) Optional: Textbook P. 187 # 9, 10, 11, 12, 13
Next Class...			
		Chapter 5 Review	Worksheet Review (Page 20-21) Chapter 5 Review Questions Textbook P. 189 # 1-6, 7, 8, 10, 11, 13, 14, 15, 16, 17, 18, 19
Chapter 5 Test			

Three-Dimensional Objects

You can describe a three-dimensional (3-D) object by its **faces**, **edges**, and **vertices**.



1. Identify the name and the number of edges, faces, and vertices for each object.

Object	Name	Faces	Edges	Vertices
a) 				
b) 				
c) 				

Circles

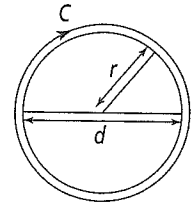
A **circle** is a set of points equal distance away from a fixed point, called the centre.

The **radius** is the distance from the centre of a circle to the outside edge. The letter r is often used to represent the radius.

The **diameter** is the distance across a circle through its centre. The letter d is often used to represent the diameter.

The distance around a circle is called the **circumference**. The letter C is often used to represent the circumference.

The diameter is two times the radius: $d = 2r$. The radius is half the diameter: $r = \frac{d}{2}$.



Name: _____

Date: _____

To find the circumference of a circle, use the formula $C = \pi \times d$ or $C = 2 \times \pi \times r$. Use 3.14 as an approximate value for π .

$C = \pi \times d$

$C = 2 \times \pi \times r$

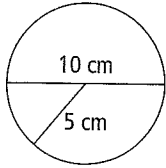
$C \approx 2 \times 3.14 \times 5$

$C \approx 3.14 \times 10$

$C \approx 3.14$

$C \approx 3.14$

The circumference is 3.14



$C = \pi \times d$
 $C \approx 3 \times 10$
 $C \approx 30$



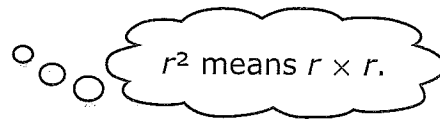
The area, A , of a circle is the space the circle encloses.

To find the area of a circle, use the formula $A = \pi \times r^2$ or $A = \pi r^2$.

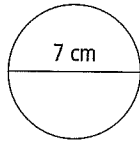
$A = \pi \times r^2$

$A \approx 3.14 \times 5 \times 5$

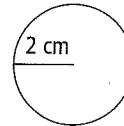
$A \approx 78.5$ The area is 78.5 cm².



- 2. a) Find the circumference of the circle to the nearest tenth of a centimetre.



- b) Find the area of the circle to the nearest tenth of a centimetre squared.

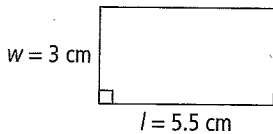


Area Formulas

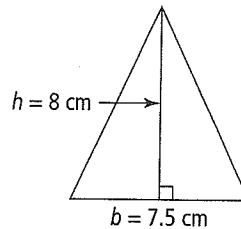
The **area** is the number of square units needed to cover a surface.

- 3. Use the formulas to calculate the area of these shapes to the nearest tenth of a centimetre squared.

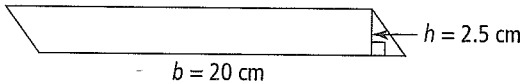
- a) Rectangle: $A = l \times w$



- c) Triangle: $A = b \times h \div 2$



- b) Parallelogram: $A = b \times h$



Name: _____

Date: _____

5.1

Views of Three-Dimensional Objects

MathLinks 8, pages 164–169

Key Ideas Review

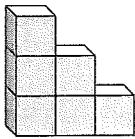
Choose from the following terms to complete #1

build draw front three 3-D top side

1. a) A minimum of _____ views are needed to describe _____ objects.

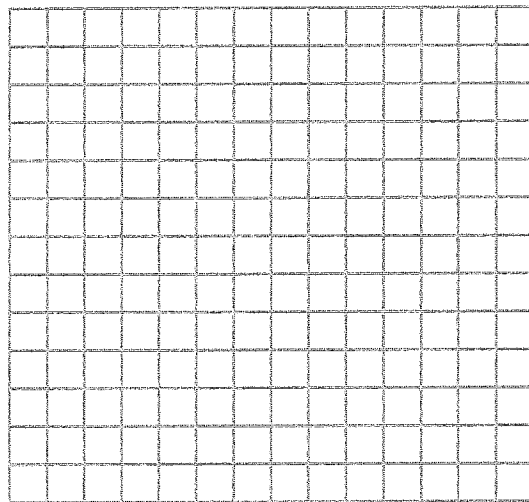
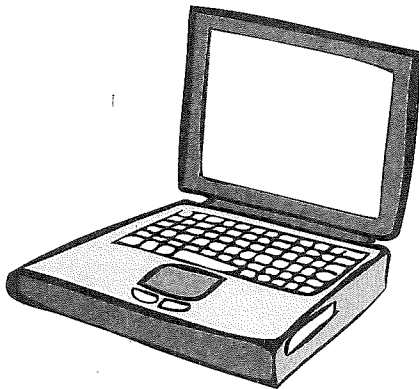
b) Using the _____, _____, and _____ views, you can _____ or _____ a _____ object.

2. Label the views of the item.



Practise and Apply

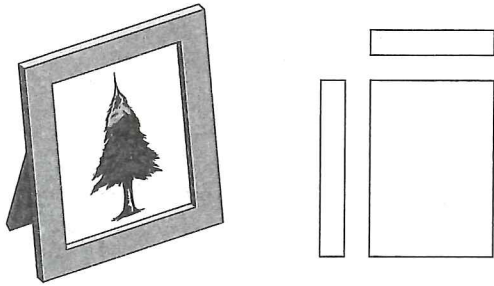
3. Label each view. Sketch the top, side, and front views.



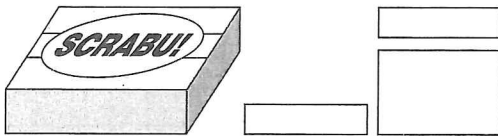
Name: _____

4. Circle the top view of each object.

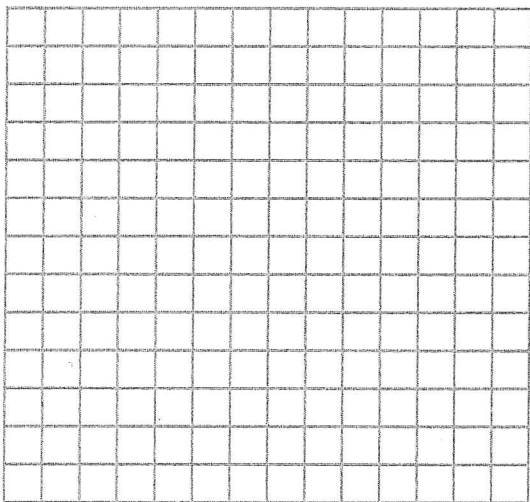
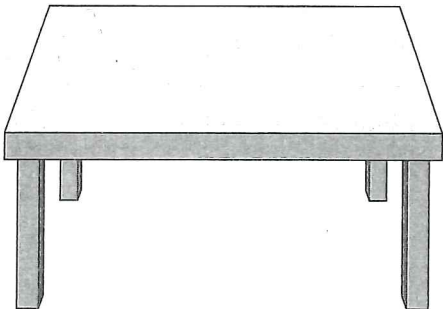
a)



b)

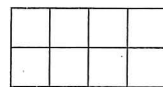
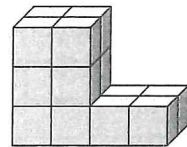


5. Draw and label the top, front, and side views of the table below.

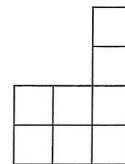


* use the graphing paper on the next page.

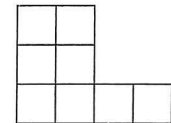
6. Choose the correct top, front, and side view for this object and label each one.



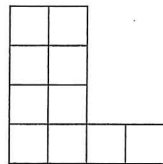
A



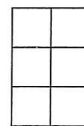
B



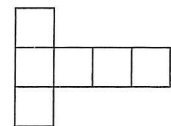
C



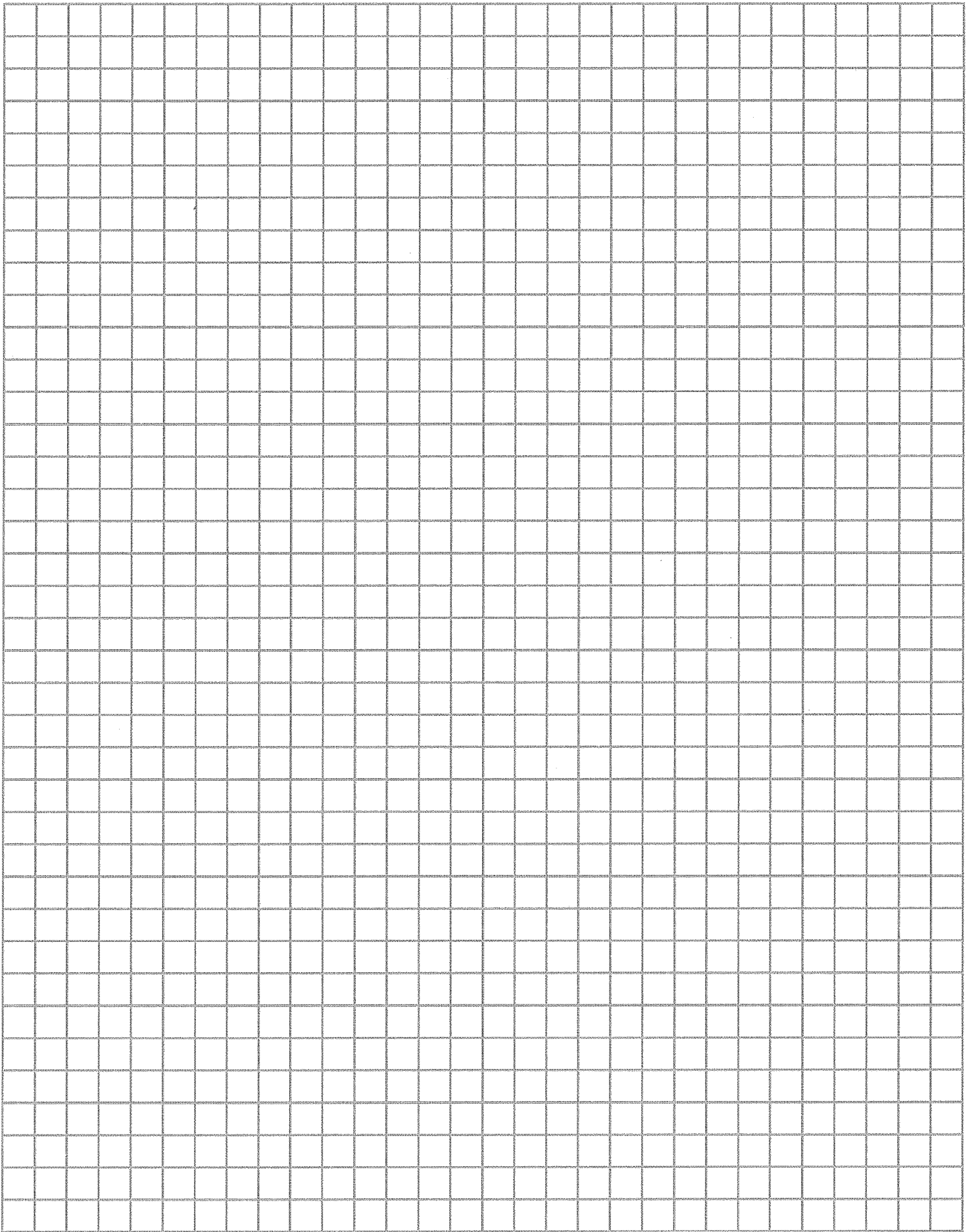
D



E



F



1 Block = 1/4 "

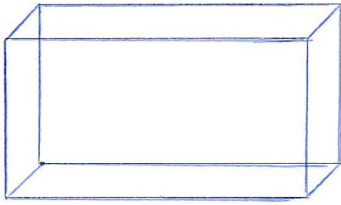


Math-Aids.Com



Date: _____

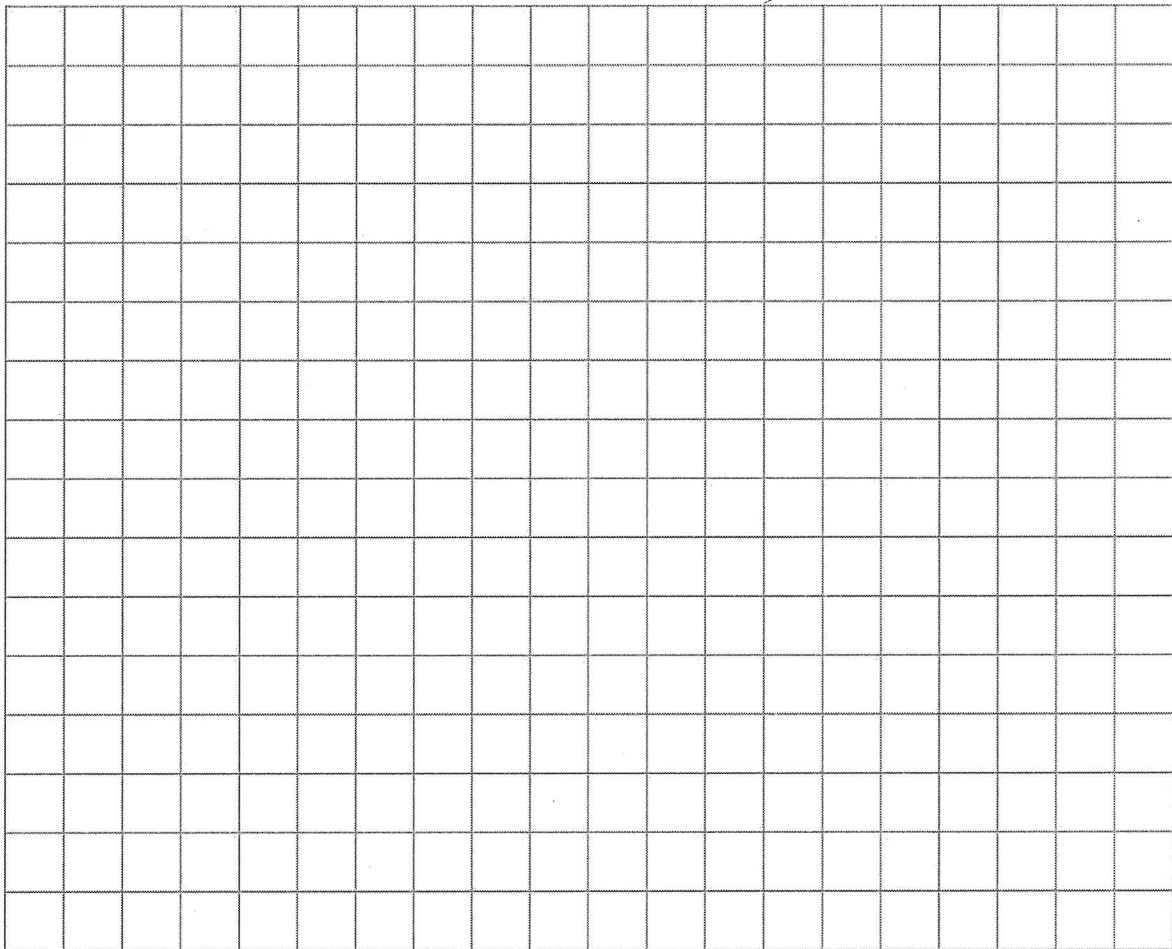
5.2 Nets of 3 Dimensional Objects



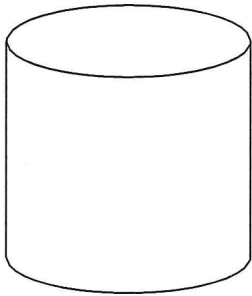
The shape at left is called a _____
_____.

If you were to cut along its edges, how many sides would u have?

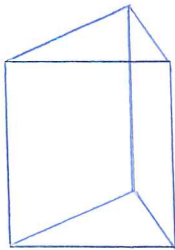
Draw some different shapes can you make by unfolding along the edges and laying it flat:



Imagine a soup can. If you were to make a net for a soup can, what shapes would you include?



This shape is called a _____
_____.



What might a net for this shape look like?

5.2

Nets of Three-Dimensional Objects

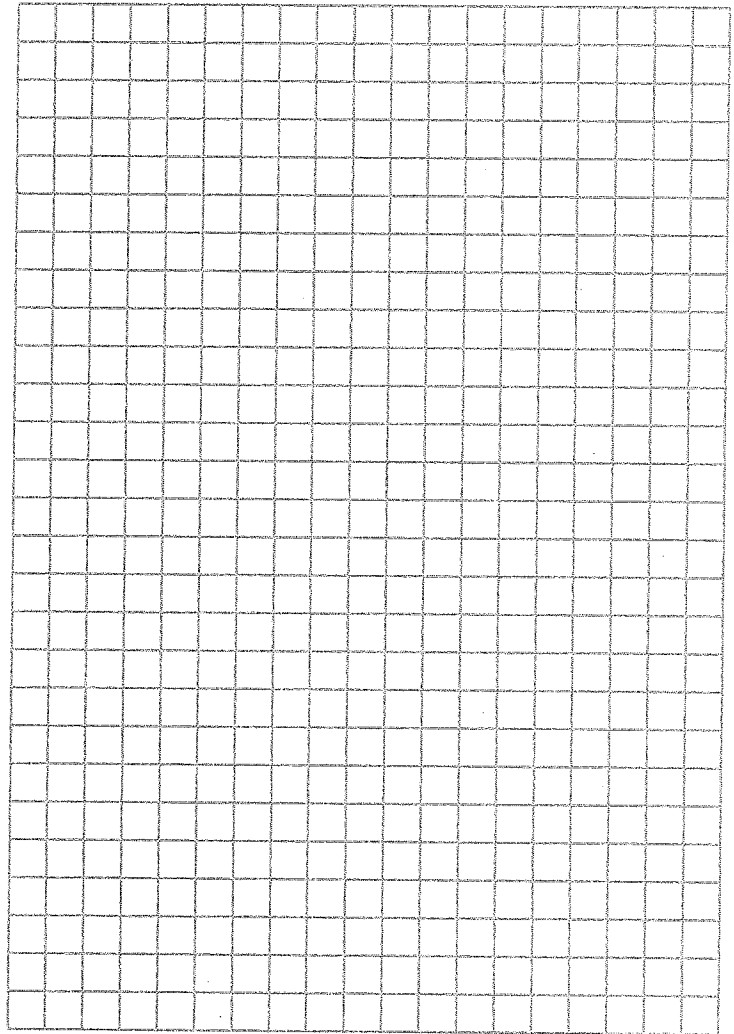
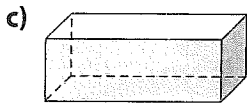
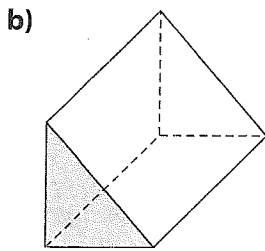
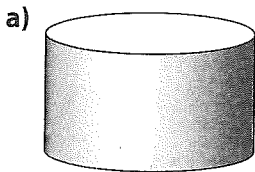
MathLinks 8, pages 170–175

Key Ideas Review

1. Complete each statement.
 - a) A _____ is a 2-D figure that creates a 3-D object when it is folded.
 - b) Different nets can be folded into the same _____.

Practise and Apply

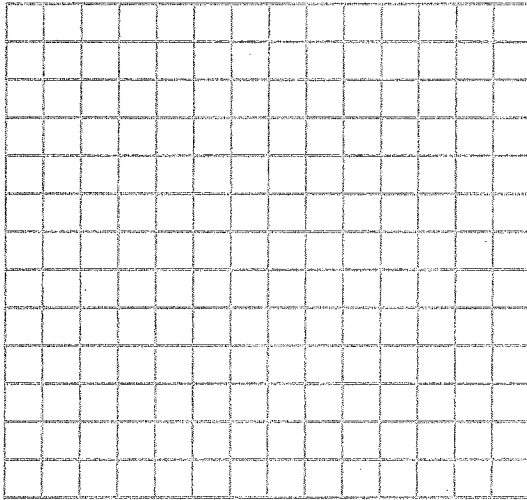
2. Draw a net for each object.



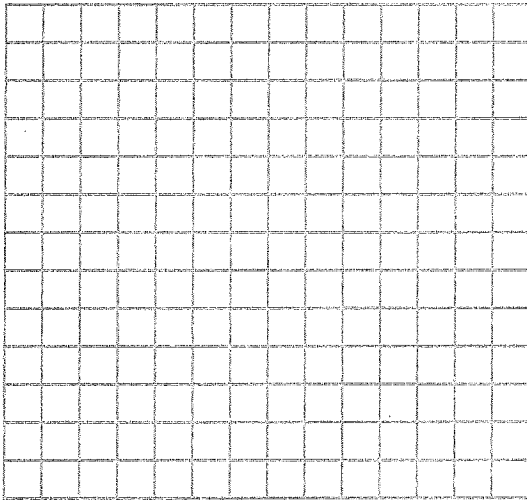
Name: _____

Date: _____

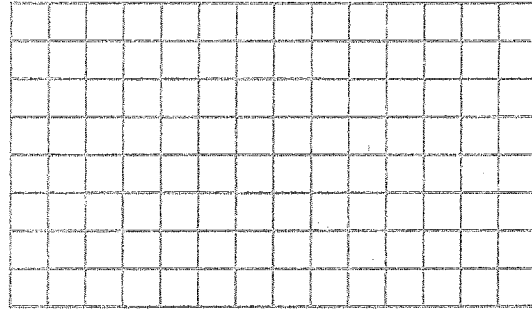
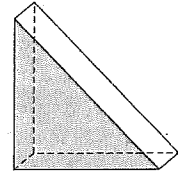
3. Using the grid box, draw a net for a rectangular prism with a length of 8 units, width of 2 units and height of 3 units.



4. Draw at least four possible nets for a cube. (Each net must fold to create a cube.)

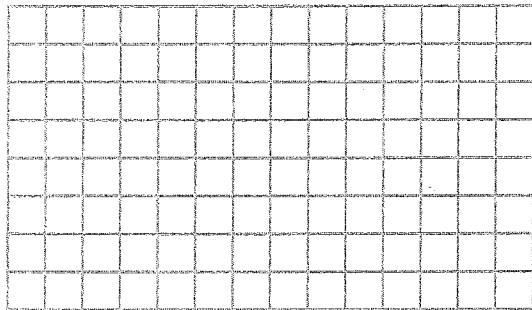


5. Jocelyn is creating a piece of art for her room, using this object as her base. Draw a net of her object so she can do a draft of her design.

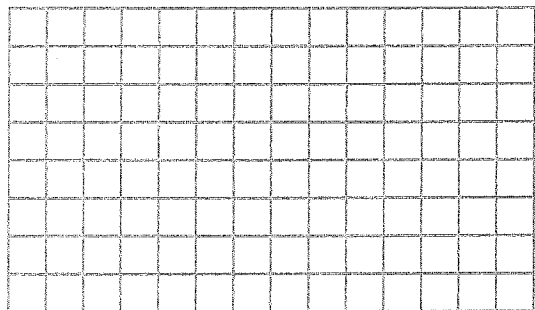


6. A company that manufactures pencils decides to shorten the length of their pencils by 5 cm. A regular pencil measures 19 cm in length.

- a) Draw a net of the new pencil with all measurements labelled.



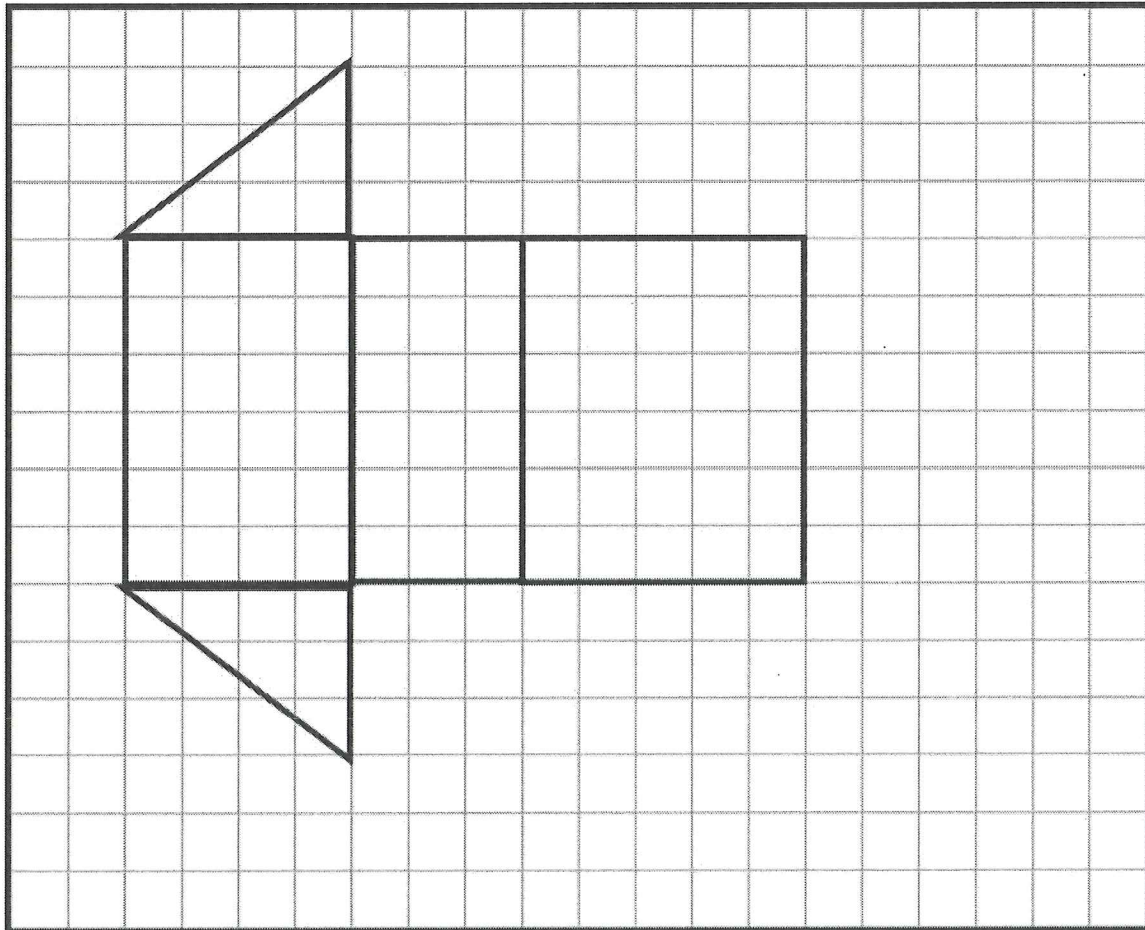
- b) Draw a net for a new box that holds ten pencils of the new length. Label your net with all measurements.



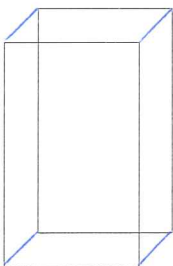
Date: _____

5.3 Surface Area of a Prism

Find the total area of the net shown. Label the measurement for each side.



What shape will this make when it is formed into a 3dimensional polyhedron?

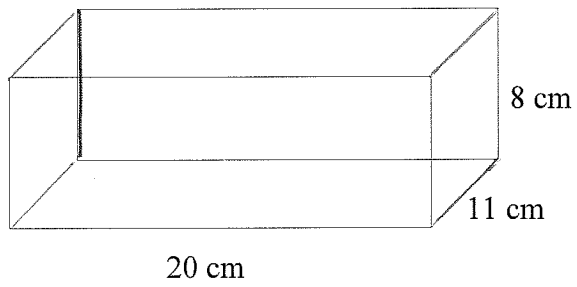


How many different rectangles would you get if you made a net of this rectangular prism?

How would you find the area of each rectangle?

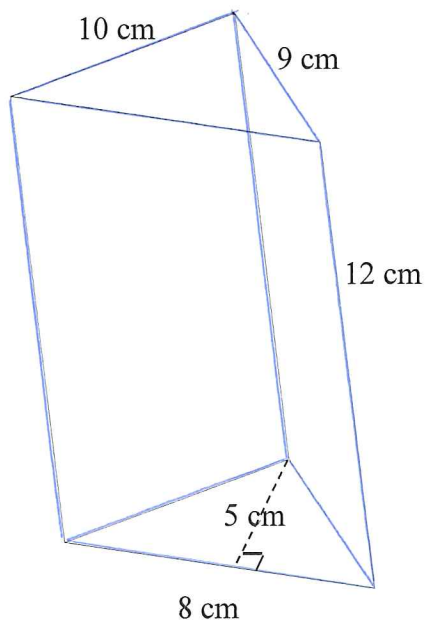
Surface Area is:

Find the surface area of each shape



Steps to follow

- i) draw and label each shape that makes up this prism:
- ii) find the area of each shape
- iii) add up the areas of each side



5.3

Surface Area of a Prism

MathLinks 8, pages 176–181

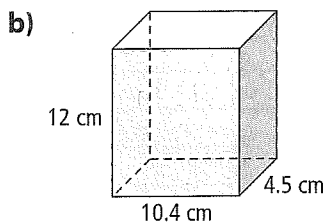
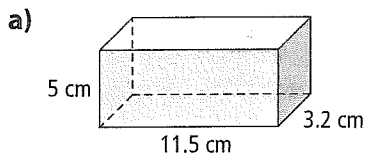
Key Ideas Review

1. Complete the statement.

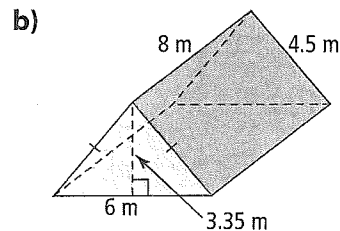
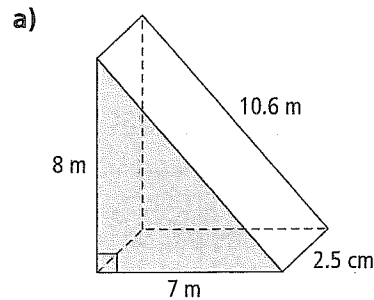
Finding the sum of all the areas of each _____ on a 3-D object is called calculating the _____.

Practise and Apply

2. Calculate the surface area of each rectangular prism to the nearest tenth of a centimetre squared.



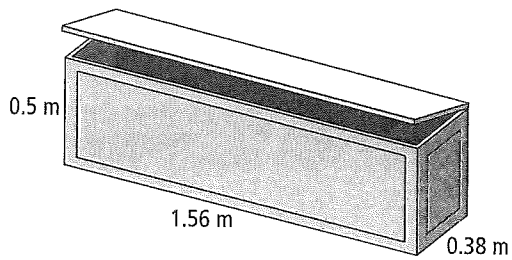
3. Find the surface area of each triangular prism to the nearest tenth of a meter squared.



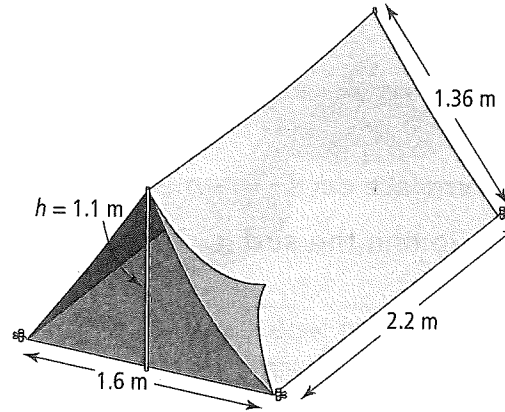
Name: _____

Date: _____

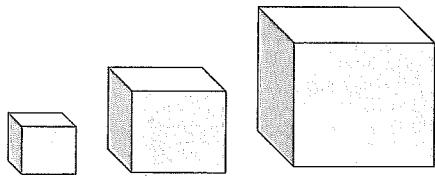
4. Ty is painting this storage bench for the deck. How much area does he need to paint, to the nearest hundredth of a square metre?



6. The Rileys need to make a new cover for their tent before going camping this summer. Their tent measures 2.2 m in length by 1.6 m wide, and it has a height of 1.1 m.



5. Peter needs to paint three boxes for a project. The boxes measure $1.5\text{ m} \times 1.5\text{ m} \times 1.5\text{ m}$, $2.5\text{ m} \times 2.5\text{ m} \times 2.5\text{ m}$, and $3.5\text{ m} \times 3.5\text{ m} \times 3.5\text{ m}$ respectively. What is the total surface area that Peter will paint, if he paints the outside of all of the boxes?



- a) Calculate the amount of material they need to make the new cover.

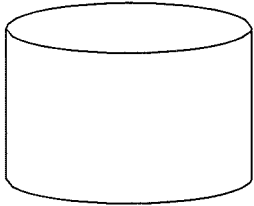
- b) Waterproof material at the Fabric Warehouse is on sale this week for \$24.95 a square metre. Calculate the cost to make the new cover.

Date: _____

5.4 Surface Area of a Cylinder

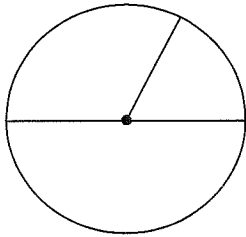
Review:

A cylinder is a 3d shape with two _____ and _____
_____ bases. The net of a cylinder is made up of one _____
and two _____.



Draw the net:

The circle at the top and bottom of the cylinder is important for finding the surface area of the cylinder:

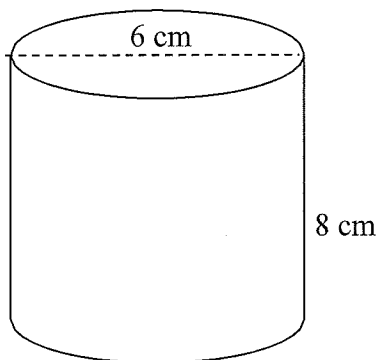


Label the diameter and radius on the circle.

Which is used to find the circumference of the circle?

Which is used to find the area of the circle?

Find the surface area of the cylinder shown:



Find the area of the top and bottom:

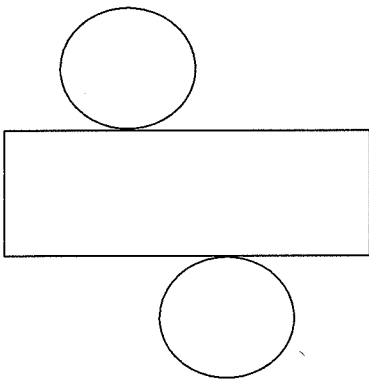
Find the area of the side:

The total surface area of the cylinder is _____.

Example:

Oscar is making a garbage can. It will be an open top cylinder. How much material does he need if the can has a diameter of 40 cm and a height of 70 cm?

A formula can also be used to find the surface area of a cylinder:



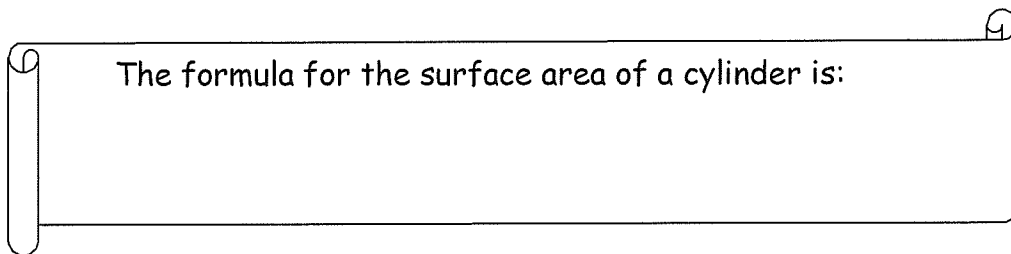
Think:

How do you find the area of 1 circle?

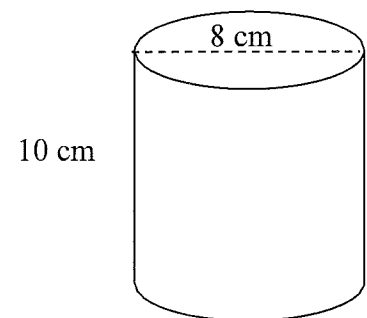
Therefore, 2 circles is _____

How do you find the width of the rectangle?

Therefore, the area of the rectangle is _____



Find the surface area of the cylinder using the formula:



5.4 Surface Area of a Cylinder

MathLinks 8, pages 182–187

Key Ideas Review

Choose from the following terms to complete #1.

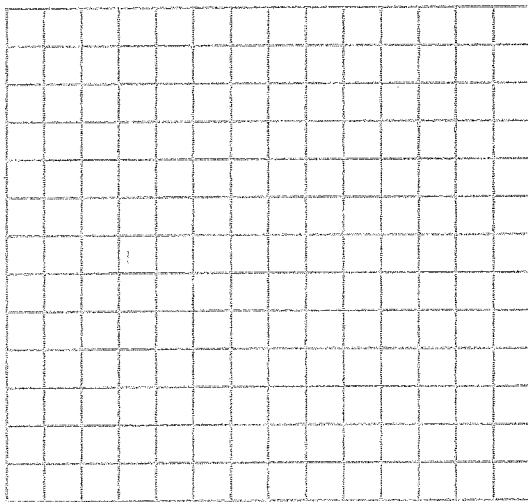
- 3-D object add area circumference cylinder

1. Complete each statement.

- a) To find the surface area of a cylinder, you _____ the _____ of each face of the object.
- b) A net of a _____ is made up of three faces.
- c) The rectangle in the net of a cylinder uses the _____ of the circle as one dimension.

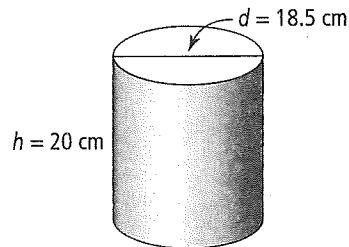
Practise and Apply

2. Sketch a net for this cylinder.

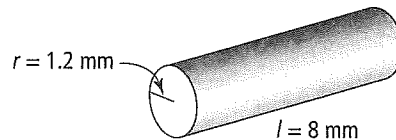


3. Estimate the surface area for each cylinder.

a)



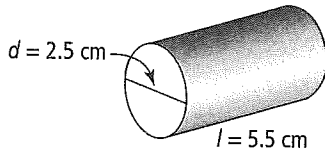
b)



Name: _____

Date: _____

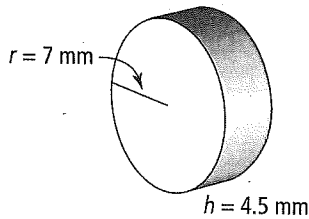
4. Calculate the surface area of this cylinder to the nearest hundredth of a square centimetre.



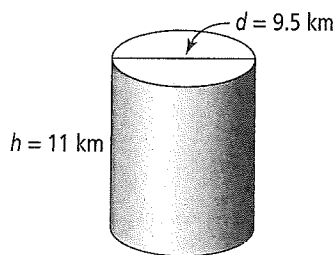
5. Use the following formula to find the surface area of each cylinder to the nearest hundredth of a square unit.

$$SA = (2 \times \pi \times r^2) + (\pi \times d \times h)$$

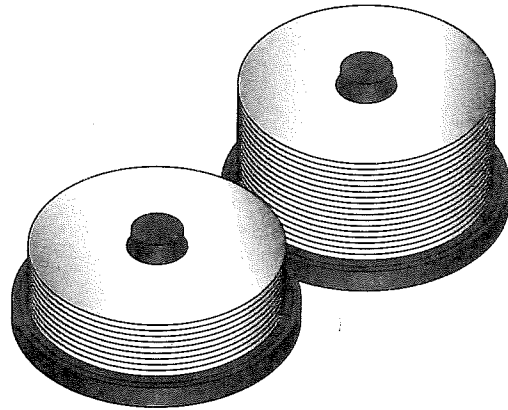
a)



b)



6. Recordable disks come in bulk packaging of various sizes.

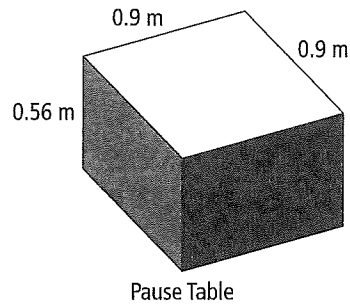
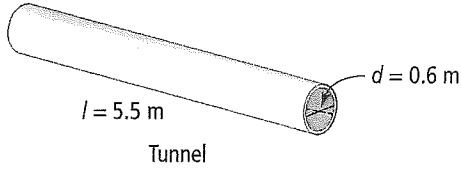


A single compact disk has a diameter of 12 cm and a width of 0.1 cm.

- a) Calculate the surface area of one compact disk to the nearest tenth of a centimetre squared.

- b) Calculate the surface area of a bulk container that holds 50 compact disks. Explain your reasoning.

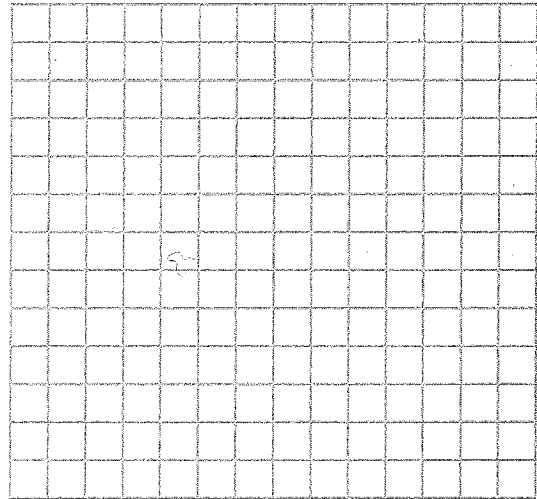
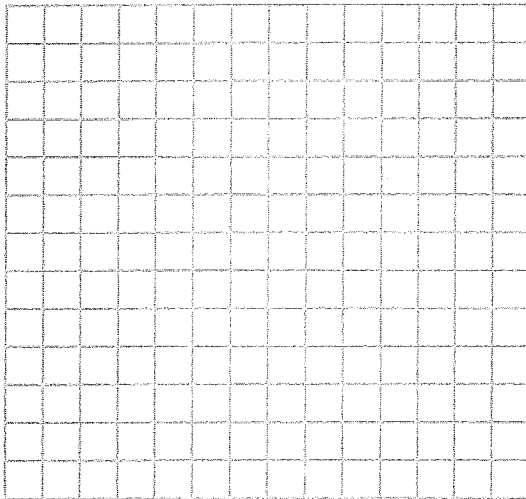
Link It Together



You have been asked to make two parts of the Dog Agility course for this year's competition. One piece is a tunnel made out of durable nylon that the dogs run through. The other piece is a cube to be used as a pause table. The dogs must stay stationary on this table for a fixed amount of time.

1. Sketch the top, front, and side view of each piece.

2. Draw a net of each.

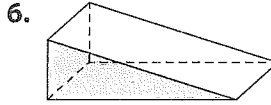
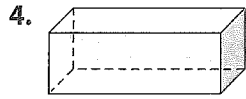


3. Calculate the surface area of each piece to the nearest hundredth of a square metre.

Vocabulary Link

Use the visuals or explanation to identify the key words from Chapter 5. Then, write them in the crossword puzzle blank.

Across



Down

1. Is the number of square units needed to cover a 3-D object.

