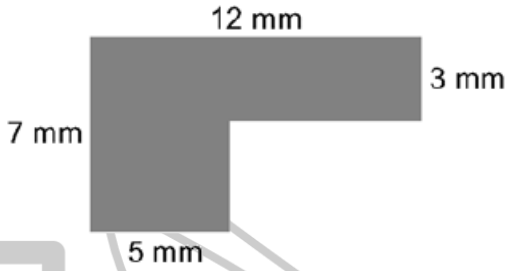
Name: _____ Date: _____ MAP 4C1

REVIEW – CHAPTER 1

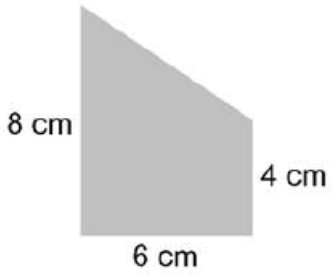
1.1 – AREA

1. Calculate the Area of each shape

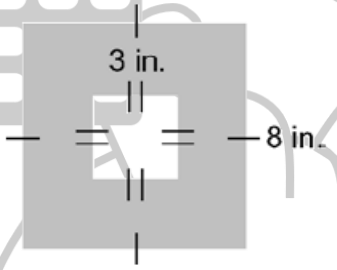
(i)



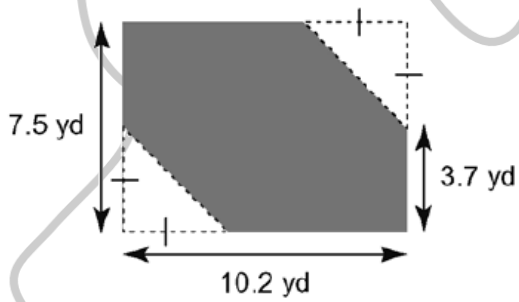
(ii)



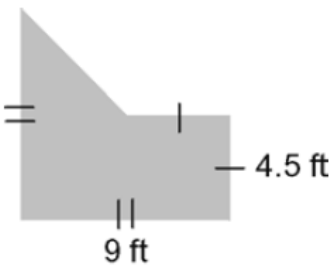
2. Determine the net area of the shape below



3. Determine the area the shape below



4.Calculate the total area of the flowerbed below. *** Hint: Calculate the Area of each component shape

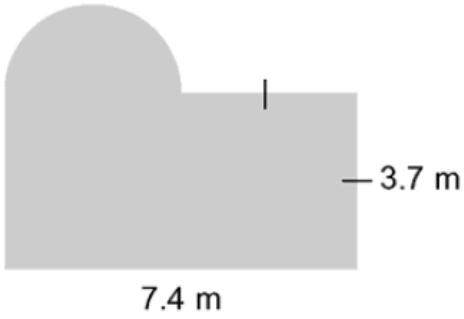


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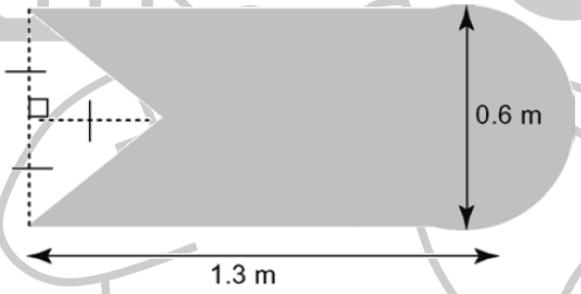
5. For the shape below:

(a) Determine the missing dimensions



(b) Determine the total Area

6. Lin designs kitchens for a home renovation company. She has designed a counter top to fit around a pipe attached to a wall (pictured below). Determine the Area of the countertop.



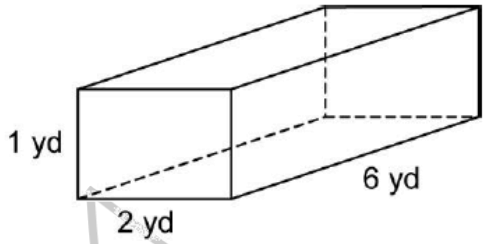
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Name: _____ Date: _____ MAP 4C1

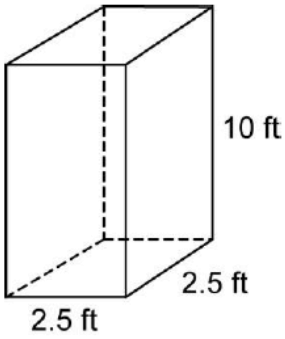
1.2 – WORK WITH VOLUME

1. Calculate the **volumne** of each rectangular-based prism

(a)

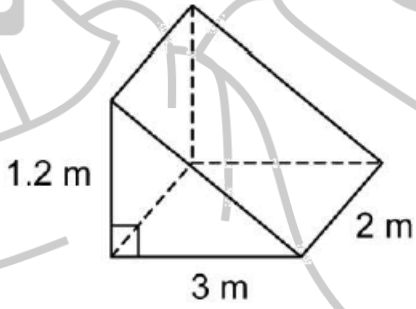


(b)

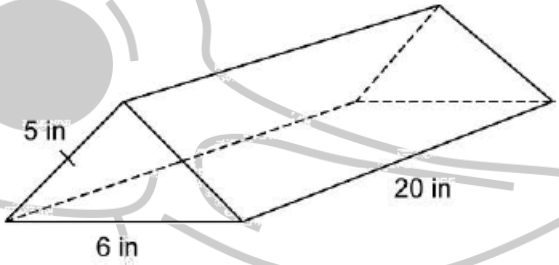


2. Calculate the **volume** of each triangular-based prism. * Calculate *height* of the triangle if required.

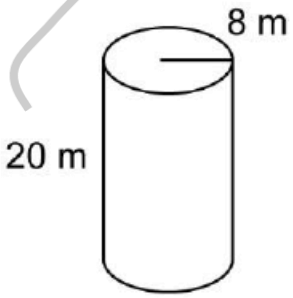
(a)



(b)



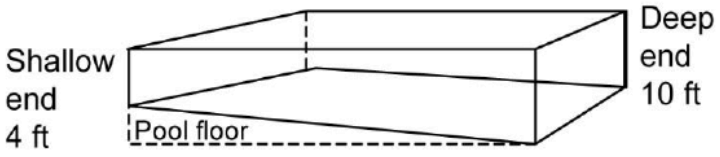
3. Calculate the **volume** of the *cylinder* below



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4. This **100 ft** by **40 ft** swimming pool has a shallow end and a deep end. Calculate the **volume** of water needed to fill up the pool pictured below.



5. The Canadian “toonie” consists of two metals fused together. The outer silver ring is made of nickel and the inner gold-coloured core is aluminum bronze. The **diameter** of the entire coin is **28 mm** and its thickness is **1.8 mm**. The **diameter** of the inner core is **18 mm**.

(a) Calculate the **volume** of the aluminum bronze to make the gold-coloured core

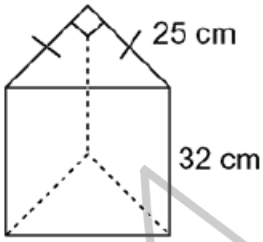
(b) Calculate the **volume** of nickel used to make the silver-coloured ring

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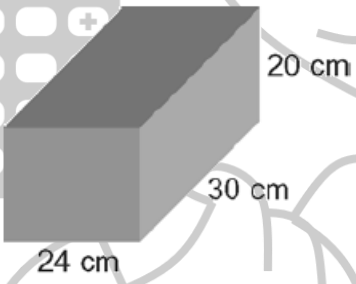
Name: _____ Date: _____ MAP 4C1

1.3 – SURFACE AREA

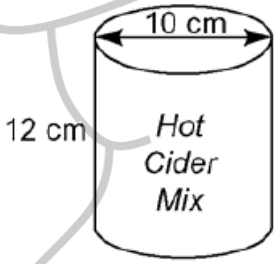
1. Calculate the **surface area** of the box below. * Calculate the area of each face and add together



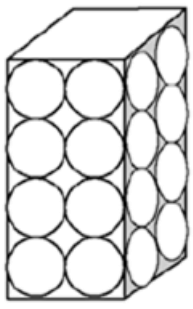
2. Determine the **surface area** of the box pictured below



3. A can of paint has dimensions as shown below. Determine the **surface area** of the can to the nearest centimetre



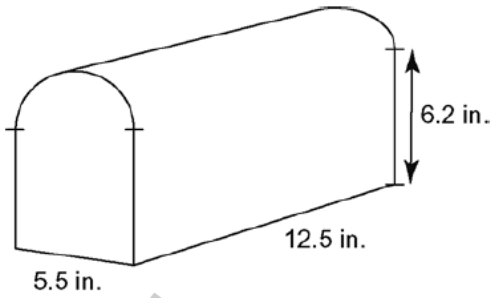
4. A standard pool ball has a **diameter of 2.25 in**. Determine the **surface area** of the square-based prism box below.



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Name: _____ Date: _____ MAP 4C1

5. Determine the **surface area** of the mailbox pictured below



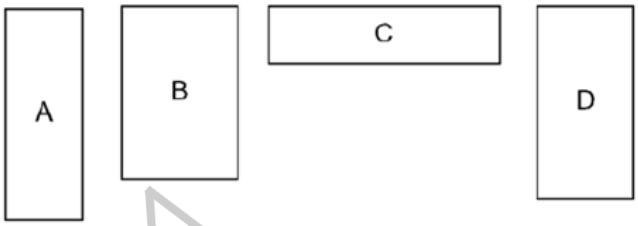


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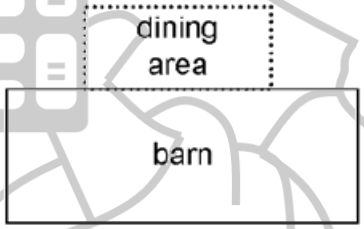
Name: _____ Date: _____ MAP 4C1

1.4 – OPTIMIZE PERIMETER and AREA

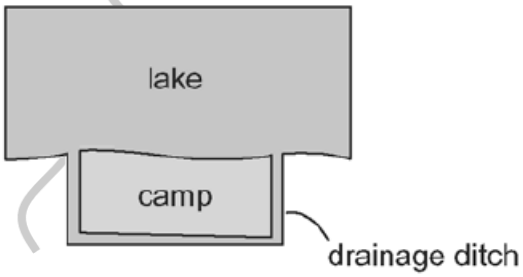
1. The rectangles below all have the same perimeter. Which of these would have the **greatest area**? Explain.



2. Organizers of an outdoor music festival want to enclose a rectangular dining area against a large barn. They have **40 m** of rope to use as a fence. Determine the **length** and **width** of a fence that will provide the maximum area.



3. A scout camp is being built on a shore of a lake. The scouts are digging a narrow **100 m** long drainage ditch to surround the rectangular camp area on three sides (as pictured below). Determine the **length** and **width** of a ditch that will provide the maximum area for the camp

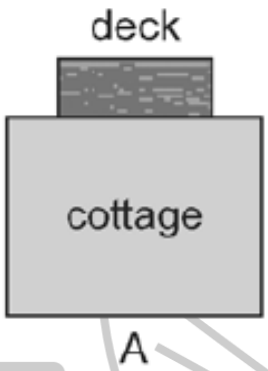


4. Tyrone is a furniture designer. He is designing a rectangular desk that must have an **area of 7200 cm^2** and with a minimum perimeter. What are the dimensions of the desk?

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5. Conrad wants to build a **160 ft²** deck against his cottage (pictured below). What is the minimum length of railing needed to enclose the deck?



6. What dimensions will provide the maximum area for a rectangle with each perimeter?

(a) 20 m (b) 36 m (c) 50 m

7. To brighten a room, a rectangular window will be built into a wall. To keep the cost low, the perimeter of the window must be **6 m**. What window dimensions will allow the maximum amount of sunlight to pass through?

8. A rectangular enclosure is created using **82 m** of rope.

(a) Determine the dimensions of the rectangular enclosure with a maximum area?

(b) Calculate the area of the rectangular enclosure

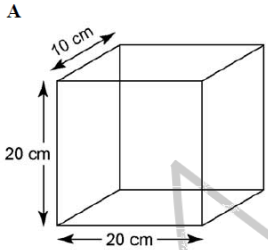
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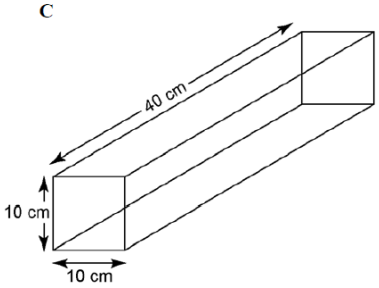
1.6 – ANALYSE OPTIMUM VOLUME and SURFACE AREA

1. Each box below has the same volume. Without calculating, which box would have its **surface area *minimized***? Explain.

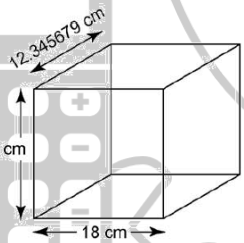
A



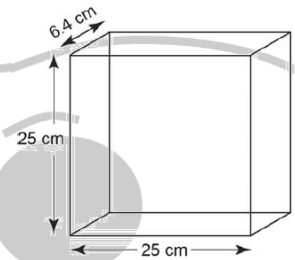
C



B

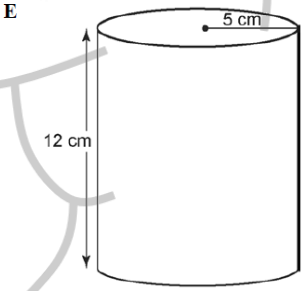


D

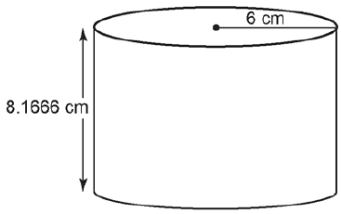


2. Each cylinder below has the same surface area. Without calculating, which cylinder would have its **volume maximized**? Explain.

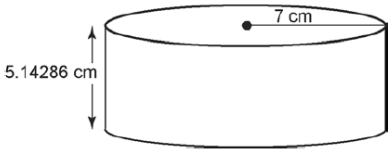
E



F



G



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Name: _____ Date: _____ MAP 4C1

3. A shed in the shape of a square-based prism is to have a **volume of 800 m^3**. Determine the dimensions of the shed with its surface area *minimized*.

4. Pyjamas are to be shipped in boxes in the shape of square-based prisms, **40 pairs** to a box. The pyjamas can be arranged in different ways but each pair of pyjamas requires **12 000 cm^3** of space.

(a) Determine the **volume** of the shipping box

(b) What are the dimensions of the box with its surface area *minimized*?

5. For each *surface area*, determine the radius and height of a cylinder with its volume *maximized* and calculate the **volume**.

(a) 1200 cm^2 (b) 10 m^2 (c) 125 cm^2

6. For each *volume*, determine the radius and height of a cylinder with its volume *maximized* and calculate the **surface area**.

(a) 1200 cm^3 (b) 1 m^3 (c) 225 cm^3

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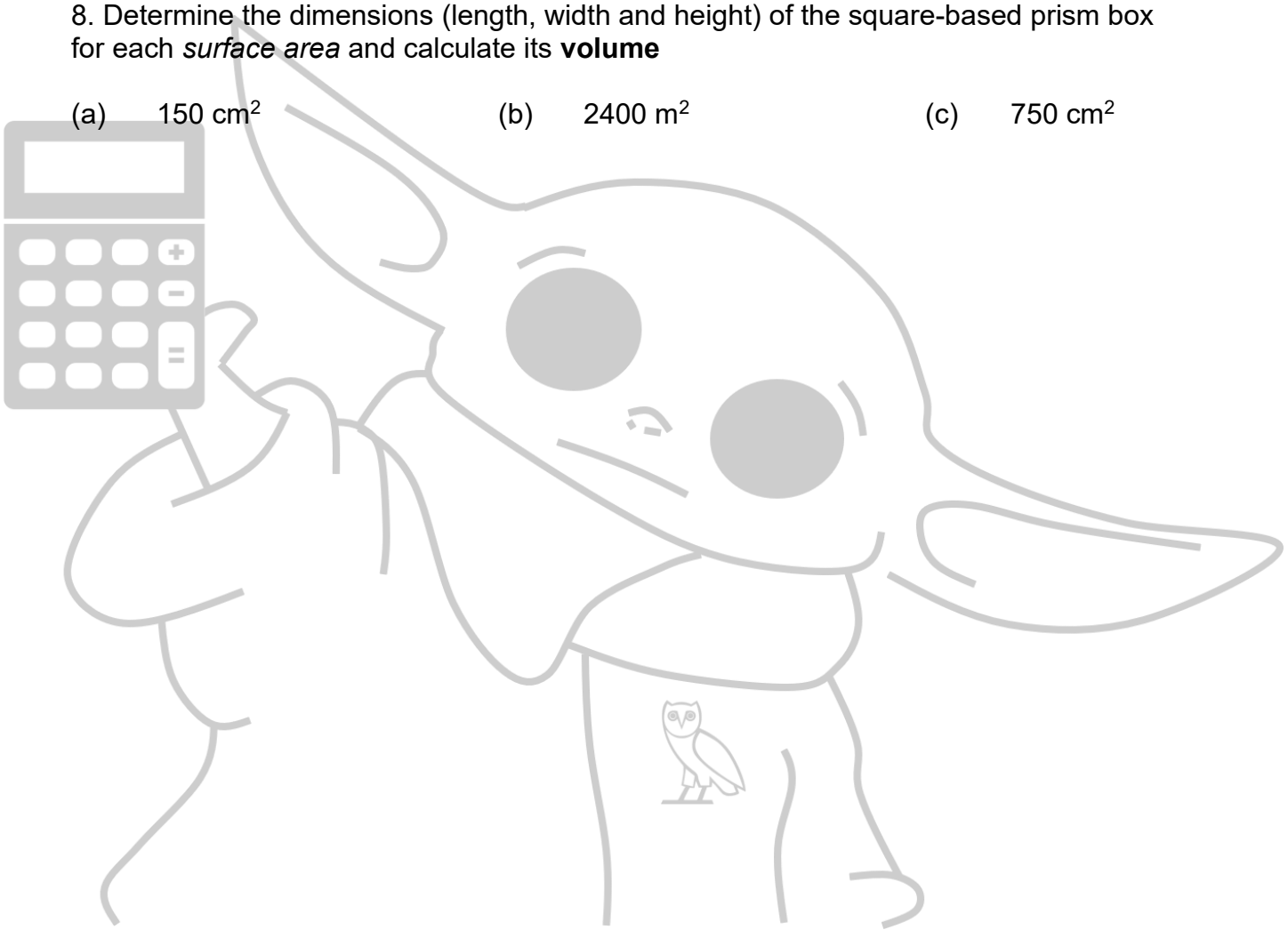
Name: _____ Date: _____ MAP 4C1

7. Determine the dimensions (length, width and height) of the square-based prism box for each volume and calculate its surface area

(a) 512 cm^3 (b) 1000 cm^3 (c) 750 cm^3

8. Determine the dimensions (length, width and height) of the square-based prism box for each *surface area* and calculate its **volume**

(a) 150 cm^2 (b) 2400 m^2 (c) 750 cm^2



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Name: _____ Date: _____ MAP 4C1

SOLUTIONS

1.1

1. (i) 56 mm^2 ii) 36 cm^2 2. 55 in^2

3. 62.1 yd^2 4. 50.625 ft^2

5. (a) Rectangular sides = 3.7 m, Diameter of semi-circle = 3.7 m

   (b) 32.8 m^2

6. 8314 cm^2

1.2

1. (a) 12 yd^3 (b) 62.5 ft^3 2. (a) 3.6 m^3 (b) 240 in^3

3. 4019 m^3 4. 28000 ft^3

5. (a) 458 mm^3 (b) 650 mm^3

1.3

1. 3357 cm^2 2. 3600 cm^2 3. 534 cm^2

4. 202.5 in^2 5. 424 in^2

1.4

1. B; closest to a square 2. width = 10 m, length = 20 m

3. 25 m x 50 m 4. 84.9 cm x 84.9 cm

5. 36 ft

6. (a) 5 m x 5 m (b) 9 m x 9 m (c) 12.5 m x 12.5 m

7. 1.5 m x 1.5 m

8. (a) 20.5 m x 20.5 m (b) 420.25 m^2

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Name: _____ Date: _____ MAP 4C1

1.6

1. B; closest to a cube
2. E; height is almost twice the radius (h = 2r)
3. 9.283 m
4. (a) 480 000 cm^3 (b) 78.3 m
5. (a) r = 7.98 cm, h = 15.96 cm, V = 3193 cm^3

   (b) r = 0.73 m, h = 1.46 m, V = 2 m^3

   (c) r = 2.58 cm, h = 5.16 cm, V = 108 cm^3
6. (a) r = 5.8 cm, h = 11.6 cm, SA = 634 cm^2

   (b) r = 0.5 m, h = 1.0 m, SA = 5m^2

   (c) r = 3.3 cm, h = 6.6 cm, SA = 205 cm^2
7. (a) 8 cm x 8 cm x 8 cm, SA = 384 cm^2

   (b) 10 cm x 10 cm x 10 cm, SA = 600 cm^2

   (c) 9.1 cm x 9.1 cm x 9.1 cm, SA = 497 cm^2
8. (a) 5 cm x 5 cm x 5 cm, V = 125 cm^3

   (b) 20 m x 20 m x 20 m, V = 8000 m^3

   (c) 11.2 cm x 11.2 cm x 11.2 cm, V = 1405 cm^3

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