

Grade 11 College Math

Lesson: 7 - 1Unit: GeometryTopic: Prerequisite Skills

‡ **note: Prerequisite Skills**

Identifying two and three dimensional shapes is important when trying to determine either perimeter, surface area or volume in order to use the correct formula. Word definitions are important for shape recognition. For example,

polygon – two-dimensional figure constructed of any number of line segments

regular polygon – two-dimensional figure with every side equal in measure

circle – two-dimensional figure with each point equidistant from the centre

triangle – two-dimensional constructed from exactly three line segments

rectangle – two-dimensional figure with four sides meeting at right angles

square – two-dimensional figure with exactly four equal sides meeting at right angles

trapezoid – two-dimensional figure with four sides, one pair of which are parallel

prism – three-dimensional figure with the same polygon base and top

rectangular prism - three-dimensional figure with a rectangular base and top

cylinder - three-dimensional figure with the same circular base and top

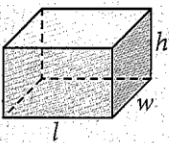
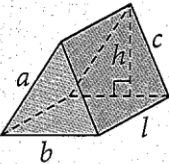
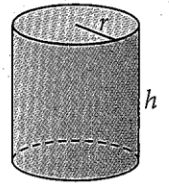
pyramid – three-dimensional figure with a polygon base and triangular sides that meet at a point

Important formulas that your text uses are:

Perimeter and Area

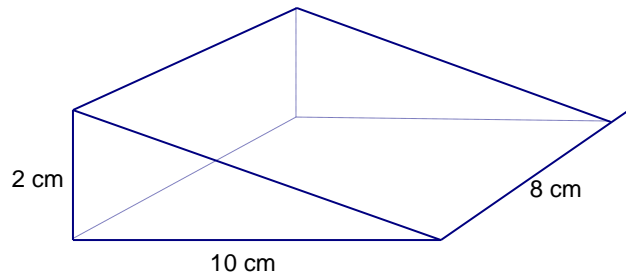
Figure	Perimeter/Circumference	Area
rectangle	$P = 2l + 2w$	$A = lw$
triangle	$P = a + b + c$	$A = \frac{1}{2}bh$
circle	$C = \pi d, C = 2\pi r$	$A = \pi r^2$

Surface Area and Volume

Figure	Surface Area	Volume
	$SA = 2lw + 2wh + 2lh$	$V = lwh$
	$SA = al + bl + cl + bh$	$V = \frac{1}{2}blh$
	$SA = 2\pi rh + 2\pi r^2$	$V = \pi r^2 h$

If Mark has a right angled door wedge that is 8cm wide by 10cm long and is 2cm high,

- what is the name of this shape
triangular prism
- draw a diagram that represents the dimensions



- find the surface area and volume of this shape.
*for SA, you must find the missing side of your triangle

$$x^2 = 10^2 + 2^2$$

$$x^2 = 100 + 4$$

$$x^2 = 104$$

$$x = \sqrt{104}$$

$$x = 10.2 \text{ cm}$$

*now we can use the formula provided with $a = 2$, $b = 10$, $c = 10.2$, and $l = 8$

*note that the height is also equal to 2 cm because our wedge is right angled

$$SA = al + bl + cl + bh$$

$$SA = 2(8) + 10(8) + 10.2(8) + 10(2)$$

$$SA = 197.6 \text{ cm}^2$$

*to find volume we use the same $a = 2$, $b = 10$, $c = 10.2$, and $l = 8$

$$V = \frac{1}{2}blh$$

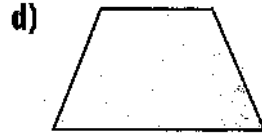
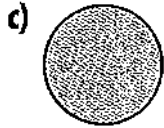
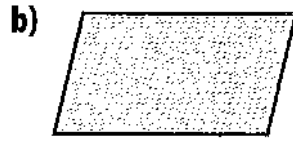
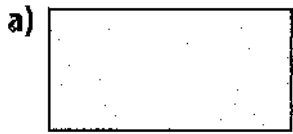
$$V = \frac{10(8)(2)}{2}$$

$$V = 80 \text{ cm}^3$$

✚ **homework assignment: Lesson 7 - 1**

Lesson 7 – 1:

1. Identify the two dimensional shapes shown below. (4 marks)



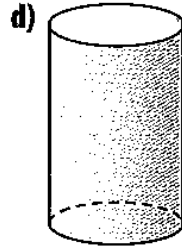
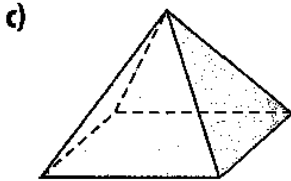
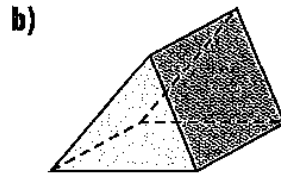
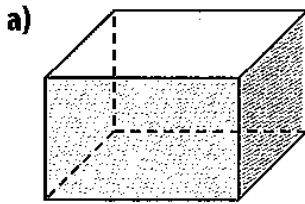
a) _____

b) _____

c) _____

d) _____

2. Identify the three dimensional shapes shown below. (4 marks)



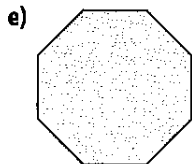
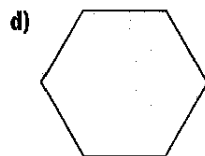
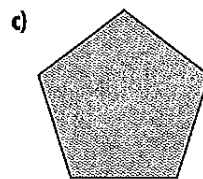
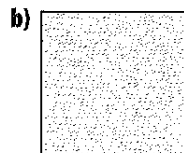
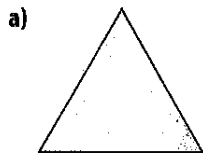
a) _____

b) _____

c) _____

d) _____

3. Identify the type of polygon shown below. (4 marks)



a) _____

b) _____

c) _____

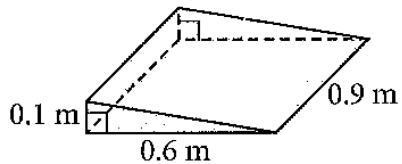
d) _____

e) _____

4. Find the perimeter and area of a rectangular sports field that measures 120 m by 100 m. (4 marks)

5. Find the perimeter and area of a school crest in the shape of an equilateral triangle with side length of 15 cm. Don't forget to find the height of the triangle. (4 marks)
6. Find the perimeter and area of the bottom of a circular wading pool with a radius of 12 m. (4 marks)
7. Will built a painting room inside his garage that measures 8m by 6m by 2.5m. find both the surface area to be painted and the volume of air inside the room. (4 marks)

8. Breanna built a wheelchair ramp in the shape of a triangular prism as shown. All the ramp is to be painted EXCEPT the very bottom that sits on the ground. What is the surface area? (4 marks)



9. A cylindrical tank has a radius of 5 ft. and a height of 12 ft. The interior will be painted with water proof paint. Find the area to be painted and the volume of the tank. (4 marks)