

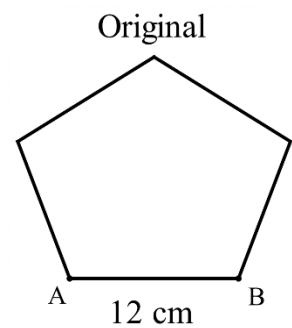
Part I: Place the letter of the correct answer in the space provided at the end. (24 marks)

1. Which is equal to a rate of \$0.50 for 2 apples?

(A) 15 apples for \$3.00
 (B) 21 apples for \$5.25
 (C) 25 apples for \$3.75
 (D) 30 apples for \$6.50

2. The pentagon shown is transformed by a scale factor of 2.5. What is the length of the image of side AB?

(A) 4.8 cm
 (B) 9.5 cm
 (C) 14.5 cm
 (D) 30 cm



3. A spherical balloon has a radius of 0.25 m and has a volume of 0.26 m^3 . If air is added until the balloon's diameter is 2 m wide, what is the new volume?

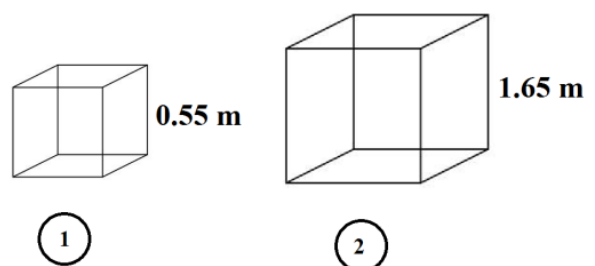
(A) 0.065 m^3
 (B) 1.04 m^3
 (C) 4.16 m^3
 (D) 16.64 m^3

4. A cylindrical concrete pillar with height 1.5 m has a surface area of 270 m^2 . The pillar is scaled so its height is 50 cm, what would the surface area of the scaled cylinder be?

(A) 30 cm^2
 (B) 90 cm^2
 (C) 810 cm^2
 (D) 2430 cm^2

5. A cube is transformed from 2 to 1. What is the scale factor that was used?

(A) $\frac{1}{4}$
 (B) $\frac{1}{3}$
 (C) 3
 (D) 4



6. Which of the following scale factors will have an object be smaller than the original?

(A) 195
 (B) 195%
 (C) 75%
 (D) 75

7. Sirloin steak costs \$110/4 kg. What is the price per pound given that $1 \text{ kg} = 2.2 \text{ lb}$.

(A) \$5.68
 (B) \$12.50
 (C) \$27.50
 (D) \$60.50

8. The Blue Jays won 6 out of their first 10 games. How many games should they lose through the halfway point of a 162 game season if this rate continued?
- (A) 32
(B) 48
(C) 65
(D) 97
9. A pair of identical dice have a total volume of 16 cm^3 . A model is built that that increases the volume of a single die to 512 cm^3 . What scale factor were the dice transformed?
- (A) 2
(B) 4
(C) 8
(D) 64
10. A cylinder was transformed by a scale factor of 2.5, if the scaled cylinder's surface area is 375 cm^2 , what was the surface area of the original cylinder?
- (A) 60 cm^2
(B) 150 cm^2
(C) 937.5 cm^2
(D) 2343.75 cm^2
11. A circle has diameter 12 cm. It undergoes a transformation that creates a circle with radius 24 cm. What scale factor was used to transform the circle?
- (A) 0.25
(B) 0.5
(C) 2
(D) 4
12. The surface area of a cube is 24 m^2 . It undergoes a transformation that decreases the surface area to 6 m^2 . What scale factor was used in the transformation?
- (A) $\frac{1}{16}$
(B) $\frac{1}{8}$
(C) $\frac{1}{4}$
(D) $\frac{1}{2}$

Multiple Choice Answers (Please use capital letters):

1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____
7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 12. _____

Part II: Show all workings in the space provided. (36 Marks)

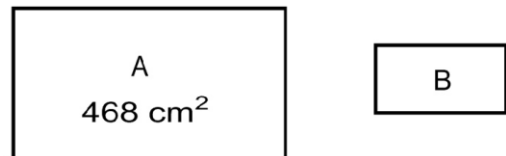
1. Paper towels are sold in a 4 roll package for \$3.49. They also are sold in 12 roll packages for \$9.99. How many 12 roll packages would you have to purchase to acquire 72 rolls? How many 4 package rolls? How much would you save by purchasing the 12 roll packages? [4 Marks]

2. At a gas station in the United States, it costs \$114.30 for 10 gallons of regular gas. At a gas station in Canada, it costs \$38.61 for 35 liters of regular gas.

(A) Determine the unit price for regular gas at each station. [2 Marks]

(B) Given that 1 gal = 3.79 L, which gas station is the most expensive? [6 Marks]

3. The following diagram shows two similar rectangles with a scale of 1:3. If the original rectangle A has an area of 468cm^2 what is the area of the similar rectangle B? Use the formula for $k^2(\text{original area}) = \text{new area}$ [4 Marks]



4. A mega sized Toblerone bar measured 8 in. wide, 10 in. high and 32 in. long. A regular version of the bar has a width of 2 in.

(A) What is the scale factor between the two bars? [2 Marks]

(B) What is the volume, to the nearest tenth, of the regular size bar? [Note: $V = \frac{lwh}{2}$] [4 Marks]

5. Nicole designed a rectangular crest that was 8 cm by 10 cm for her school's jacket. The crest was then enlarged to create a poster that had an area of 980 cm^2 . Find the area of the original crest and the scale factor? What are the dimensions of the poster? Use $k^2(\text{Original Area}) = \text{New Area}$ in your solution [6 Marks]

6. A normal size box of Raisin Bran cereal has a height of 38 cm, length of 20 cm and width of 7 cm.

(A) A scaled inflatable box is created to display in a grocery store. Given that the length of the inflatable box is 1.2 m, determine the volume of the inflatable box. [8 Marks]

(B) A snack-sized box has a **length** of 8 cm, **height** of 15.2 cm and a **width** of 3.5 cm.

i. Show and explain why the snack sized box is not a scale model of the normal sized box. [4 Marks]

ii. Based on your findings in i., which dimension would have to change for the snack sized box to be a scale model, and what would its measurement have to be? [3 Marks]

8 A cylinder has a radius of 8 cm and a height of 20 cm. ($V = \pi r^2 h$)

- A) Compute the volume of the cylinder to the nearest integer.
- B) The cylinder is to be enlarged by a scale factor of 12. Using $k^3(\text{OriginalVolume}) = \text{NewVolume}$ determine the NEW volume of its image to the nearest integer.
- C) The cylinder is to be reduced by a scale factor of one quarter its original size. Using $k^3(\text{OriginalVolume}) = \text{NewVolume}$, determine the new volume of the new image to the nearest integer.
- D) The surface area of a cylinder is $S = 2\pi r^2 + 2\pi rh$. Determine the surface area of the original cylinder in 8A to the nearest integer.
- E) Using $k^2(\text{SurfaceAreaofOriginal}) = \text{SurfaceAreaofNewImage}$, find the scale factor for the enlargement if the new surface area is $14,480 \text{ cm}^2$.

End.

Exam Unit 8 Date: _____