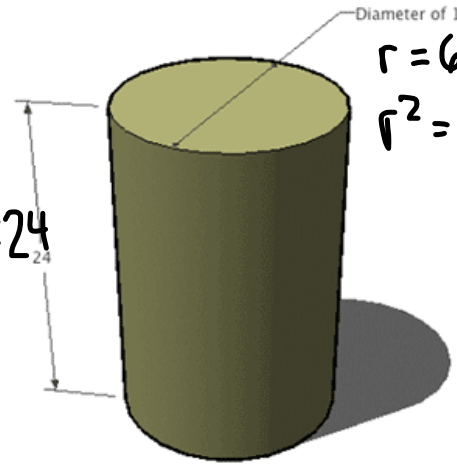
Grade 8 Math: Unit 4 PRACTICE ASSIGNMENT Name: _____

Part A: Selected Response. Place the correct answer on the space provided. (10 marks)

1) A right circular cylinder has a diameter of 12 cm and a height of 24 cm, as shown. Using $\pi = 3.14$, what is the volume of the right circular cylinder, to the nearest cubic centimeter? 1. ____

a) 1356
b) 2713
c) 5426
d) 10852

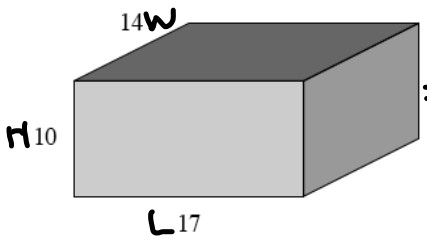
$V = Ah$
$= (\pi r^2)h$
$= (3.14 \times 36) \times 24$
$= 2712.96$



$r = 6$
$r^2 = 6^2 = 36$

2) The diagram below shows a right rectangular prism (not to scale). 2.____
Dimensions are in centimeters. What is the surface area of the right rectangular prism?

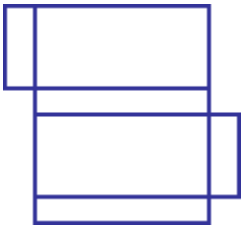
a) 1012 cm^2
b) 1208 cm^2
c) 1096 cm^2
d) 1016 cm^2



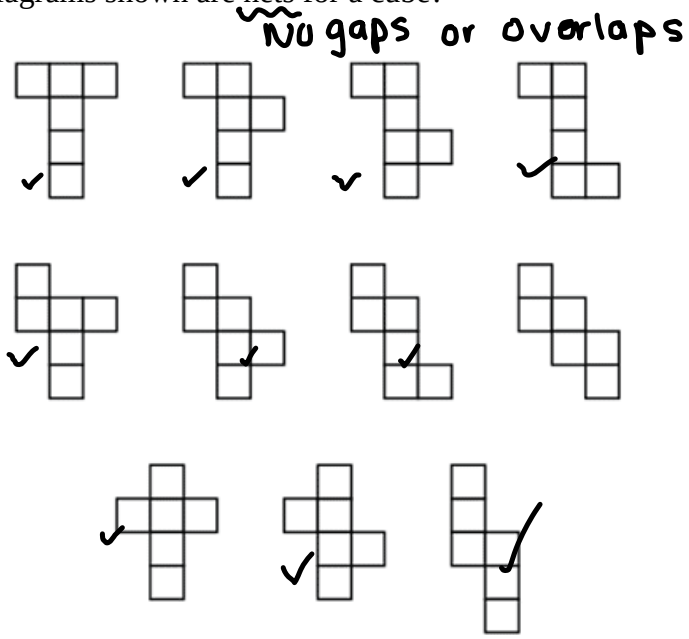
$[2 \times L \times W] + [2 \times L \times H] + [2 \times W \times H]$
$= [2 \times 17 \times 14] + [2 \times 17 \times 10] + [2 \times 14 \times 10]$
$= 476 + 340 + 280$
$= 1096$

3) What 3-D figure will this net create when it is folded? 3.___

a) Rectangular prism
b) Cube
c) Square
d) Triangular prism



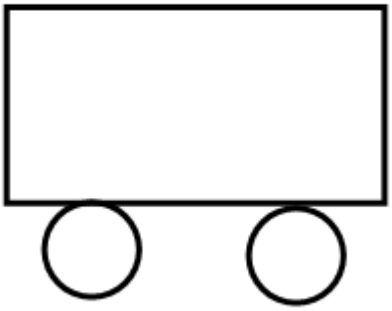
4) How many of the diagrams shown are nets for a cube? 4.____



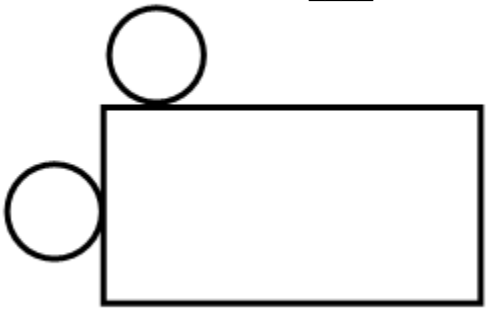
a) 8
b) 9
c) 10
d) 11

5) Which diagram is the net of a cylinder? 5. ____

A)

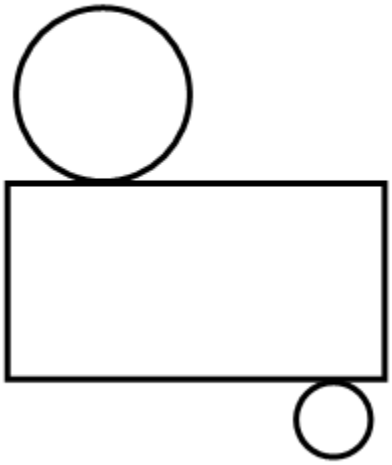


B)



C)

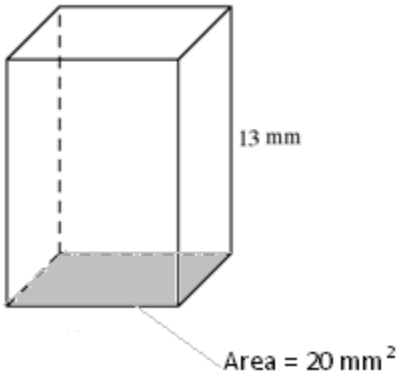
D)



6. What is the volume of the prism shown? 6. ____

e) 260 mm^3
f) 1300 mm^3
g) 3380 mm^3
h) 5200 mm^3

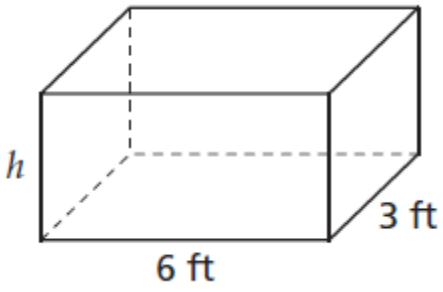
$V = Ah$
$= 20 \times 13$
$= 260$



7. A shipping company uses large crates to ship certain items. A diagram of one of the crates is shown. The volume of the crate is 72 cubic feet. What is the height, in feet, of the crate?

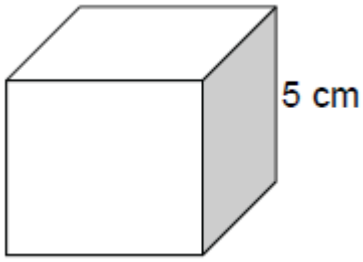
a) 3
b) 4
c) 6
d) 9

$V = Ah$
$72 = (6 \times 3) \times h$
$\frac{72}{18} = \frac{18 \times h}{18}$
$h = 4$



8. The cube shown has a volume of 125 cm^3. What is the area, in cm^2, of the base of the cube?

a) 15
b) 20
c) 25
d) 30



9. Which of the following rectangular prisms has the greatest volume?

a) Prism A having dimensions 1 m x 2.5 m x 4 m $= 10 m^3$
b) Prism B having dimensions 0.3 m x 10 m x 2 m $= 6 m^3$
c) Prism C having dimensions 6 m x 0.25 m x 6 m $= 9 m^3$
d) Prism D having dimensions 15 m x 0.2 m x 2.5 m $= 7.5 m^3$

10. Bonnie has two rectangular boxes. All the dimensions of box 1 are twice as big as the corresponding dimensions of box 2. How many times greater is the volume of box 1 than the volume of box 2?

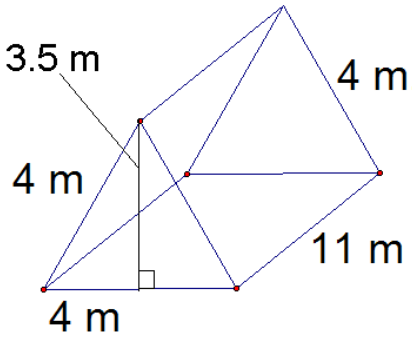
Box 2: 1 - 2 - 3 $V = 6 cm^3$
Box 1: 2 - 4 - 6 $V = 48 cm^3$

a) 2
b) 4
c) 6
d) 8

$\frac{48}{6} = 8$

Part B: Constructed Response. Answer all questions in the space provided. Show all workings.

1) Find the **volume** of the prism below (2 marks)



$V = Ah$
$= \left(\frac{bh}{2}\right) \times h$ ← distance between 2 triangle bases
$= \left(\frac{4 \times 3.5}{2}\right) \times 11$
$= 7 \times 11$
$= 77 m^3$

*units are important!

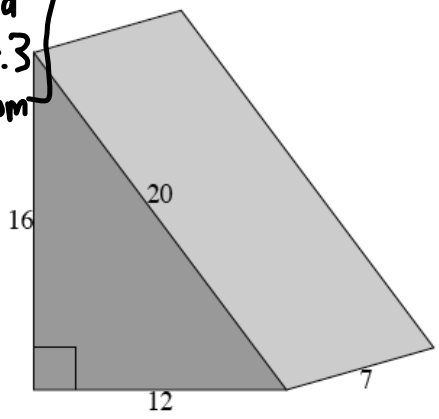
2. The diagram below shows a right triangular prism. Dimensions are in cm. (3 marks)
What is the surface area of this prism in square cm?

$S.A = [2 \times \text{Area Triangle}] + [\text{Area Rec. 1 (Left)}] + [\text{Area Rec. 2 (right)}] + [\text{Area Rec. 3 (Bottom)}]$

$= \left[2 \times \frac{12 \times 16}{2}\right] + [16 \times 7] + [20 \times 7] + [12 \times 7]$

$= 192 + 112 + 140 + 84$

$= 528 cm^2$



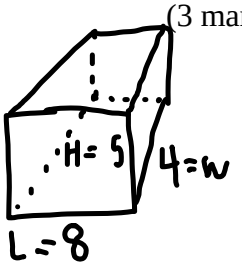
3. a) Michael wants to paint the **walls** of his rectangular room. His room is 8 m (L) long, 4 m (W) wide and 5 m (H) high. What is the total surface area that he needs to paint? (3 marks)

~~top + Bottom~~ $[2 \times L \times W]$ + front + Back $[2 \times L \times H] + [2 \times W \times H]$

$= [2 \times 8 \times 5] + [2 \times 4 \times 5]$

$= 80 + 40$

$= 120 m^2$



b) If a 3 L can of paint covers approximately 25 square meters of wall, how many cans of paint are needed to paint the walls of Michael's room, with one coat only? (1 mark)

$120 \div 25 = 4.8$

5 cans of paint are needed.

4. The Grade 8 students at a junior high school are building a playground for the local community center. They construct a sandbox with dimensions 2 m by 3 m by 35 cm in the shape of a rectangular prism. L W H

a) What is the total volume (in cubic centimetres) of sand needed to fill the sandbox? (2 marks)

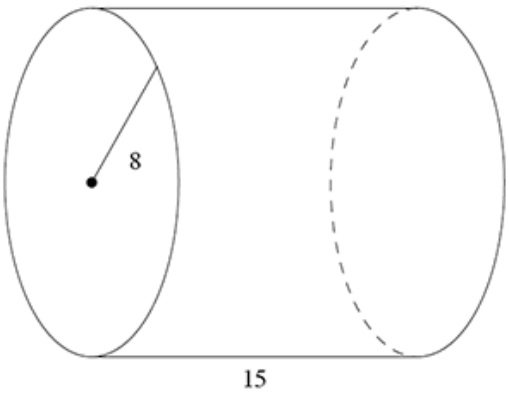
$V = Ah$
$= (l \times w) \times h$
$= (2 \times 3) \times 35$
$= 210 m^3$

NOT REQUIRED

b) A local supplier has donated sand in 10 000 cm^3 bags. How many bags are needed to fill the sandbox? (1 mark)

5. A right circular cylinder has a radius of 8 cm and a length of 15 cm. What is the surface area of the right circular cylinder to the nearest square cm? (3 marks)

$S.A_{cylinder} = [2\pi r^2] + [2\pi rh]$
$= [2 \times 3.14 \times 64] + [2 \times 3.14 \times 8 \times 15]$
$= 401.92 + 753.6$
$= 1155.52 cm^2$



$r = 8$
$r^2 = 8^2 = 64$
$h = 15$