MPM 1D9

Grade 9 Pre-AP Math
Unit 0 – Introduction to Mathematical Thinking – Practice Test

***Victim*: _____**

KU	APP	TIPS	COM
/10	/20	/12	/10

Modified True or False (5 KU)

Indicate whether each statement is ***true*** or ***false***. If false, ***change*** the underlined part to make the statement true.

1. _____ Math is like a dating service because it's all about relativity. **Change:** _____

2. _____ If the radius of a circle is doubled, its area is doubled. **Change:** _____

3. _____ A triangular pyramid has four ***lateral*** faces. **Change:** _____

4. _____ The basic elements of math are objects, operatives and relationships. **Change:** _____

5. _____ $(A_{base})(\text{height})$ is the surface area of any solid with a uniform cross-section. **Change:** _____

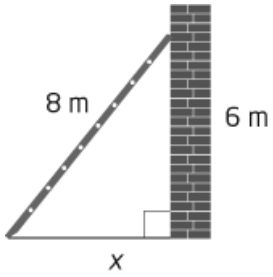
Multiple Choice (5 KU)

For questions 6 to 10, select the best answer. Write the letter of your choice in the provided blank space.

6. _____ A cone has a volume of 314.16 cm^3 and a radius of 5 cm. To one decimal place, what is its height?

(a) 10.1 cm **(b)** 12.0 cm **(c)** 11.3 cm **(d)** 12.8 cm

7. _____ A window cleaner has placed an 8-m ladder against a wall. The top of the ladder is 6 m above the ground. What is the distance, to the nearest tenth of a metre, of the ladder from the wall?



(a) 5.1 m **(b)** 5.2 m **(c)** 5.3 m **(d)** 5.4 m

8. _____ A circular swimming pool has a diameter of 8.6 m. It is filled to height of 1.6 m. To the nearest 100 L, how much water is in the pool?

(a) 93 800 L **(b)** 98 500 L **(c)** 99 900 L **(d)** 92 900 L

9. _____ Which statement is ***not*** true?

(a) The length of any side of a right triangle can be calculated if the lengths of the other two sides are known.

(b) The hypotenuse is the longest side in a right triangle.

(c) The hypotenuse is always opposite the 90° angle in a right triangle.

(d) The Pythagorean Theorem applies to ***all*** triangles.

10. _____ The measure of any exterior angle of a triangle is equal to

(a) The measure of the opposite interior angle.

(b) The sum of the measures of the two opposite interior angles.

(c) 180°

(d) 360°

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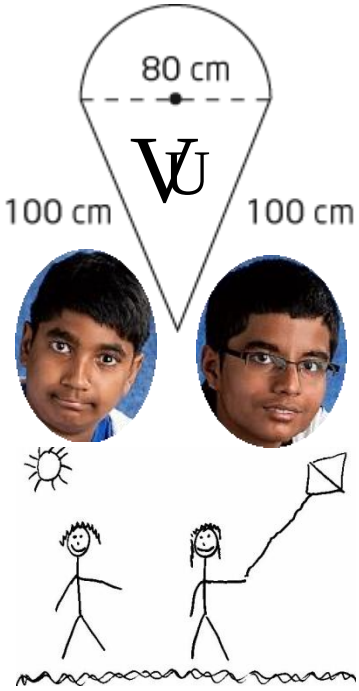
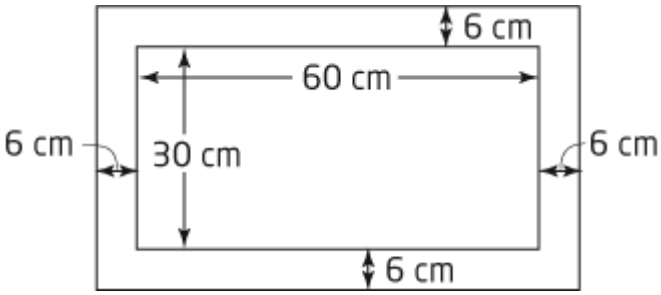
Full Solutions/Explanations

11. Vyshna and Uday have a kite-making business that they call VUiTon Fashionable Kites. Their company makes large kites in the shape shown at the right. Each of these kites has fancy gold trim around the ***perimeter***. How much gold trim is used for each kite? **(4 APP)**



12. A picture measures 60 cm by 30 cm. The mat around the picture is 6 cm wide. Find the area of the mat. **(4 APP)**



13. A ***cone*** with a volume of 120 cm^3 just fits inside a ***cylindrical*** container having the same radius and height. What is the volume of the cylindrical container? **(2 APP)**

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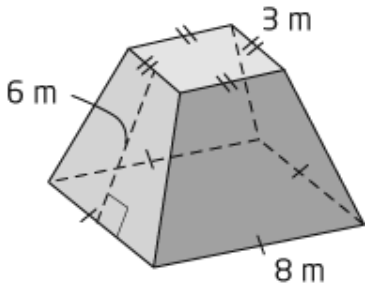
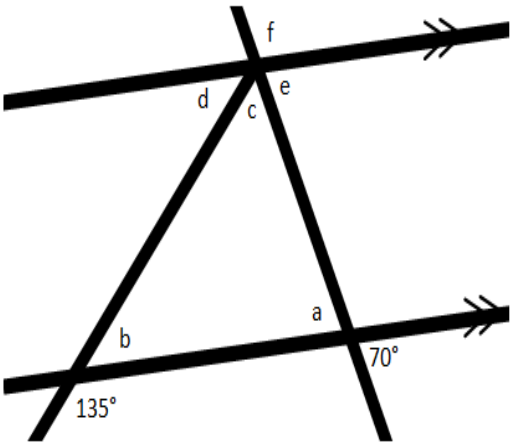
14. The base for a large statue is in the form of a frustum of a pyramid with dimensions as shown. The ***top*** and ***sides*** are covered with paint. What area is painted? **(4 APP)**



15. Find the measures of each angle labelled with a letter. In each case, state your ***reasoning***. **(6 APP)**

Measure of Angle	***Reasoning (State Why)***
a = _____	
b = _____	
c = _____	
d = _____	
e = _____	
f = _____	



16. Big Bran breakfast cereal is sold in a single serving size. This rectangular prism shaped box has dimensions 4 cm by 5 cm by 10 cm. The manufacturer also sells the cereal in a box that has dimensions three times those of the small box. Compare the volume of the two boxes and explain your answer. **(6 TIPS)**

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17. The volume of the planet Mercury is about 61,000,000,000 km^3 (61 billion cubic kilometres). The Earth's radius is about 2.6 times that of Mercury. What is the Earth's volume? **(6 TIPS)**

Mercury (left) Compared to Earth

18. Shown at the right is one of the patterns that you investigated in the introductory activity for unit 0. In this activity, we discovered that

1 2 3 4

$$c = 6(d-2)+4, d \neq 1,$$

where d represents the diagram number and c represents the number of coloured cubes.

(a) Without using a table of values, explain why this equation makes sense. **(4 COM)**

(b) Explain why, in the equation given above, the value of d is not allowed to equal 1. **(1 COM)**

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