Name: _____     Date: _____

# Unit 1 Test

**Multiple Choice**

*For #1 to 5, choose the best answer.*

**1.** For the arithmetic sequence,

$\square, \square, x + 4y, x + 6y, \text{L}$ , which of the following statements is false?

**A** The expression representing $t_1$ is $x + y$.

**B** The expression representing the common difference is $2y$.

**C** The next term in the sequence is $x + 8y$.

**D** The expression for $t_8$ is $x + 14y$.

**2.** For the pendulum shown, when the raised ball lowers, it hits the chain of balls and causes the ball at the other end to swing up to a height 40% of the previous height. If one end ball is released from a height of 150 cm, what would the height of the end ball reach after 4 hits?

**A** 1.5 cm

**B** 3.8 cm

**C** 6.0 cm

**D** 9.6 cm
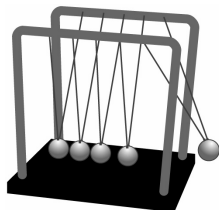
**3.** Lise found a picture of her favourite hoop dancer, from the *Festival du Voyageur*, in Winnipeg, MB. Lise emailed the photo to five of her friends, who in turn each sent the picture to five of their friends. How many people, including Lise, would have seen the picture after four email stages?

**A** 126

**B** 390

**C** 626

**D** 781

**4.** Determine the exact value of sin 210°.

**A** $\dfrac{\sqrt{3}}{2}$

**B** $-\dfrac{\sqrt{3}}{2}$

**C** $\dfrac{1}{2}$

**D** $-\dfrac{1}{2}$

**5.** Given the coordinates of points on the terminal arm of angles in standard position which point does not have the same reference angle as point $P(2, -6)$?

**A** $(-2, 6)$

**B** $(-6, 2)$

**C** $(2, 6)$

**D** $(-2, -6)$

**Numerical Response**

*Complete the statements in # 6 to 11.*

**6.** The sum of the series

$51 + 45 + 39 + \ldots + (-27)$ is $\square$.

**7.** Given $\cos \theta = \dfrac{\sqrt{2}}{2}$, the largest value of $\theta$ where $0° \le \theta < 360°$ is $\square$ degrees.

**8.** In the diagram, the length of y, to the nearest tenth of a centimetre, is $\square$.

11 cm

26°  18°

16 cm  34°

y
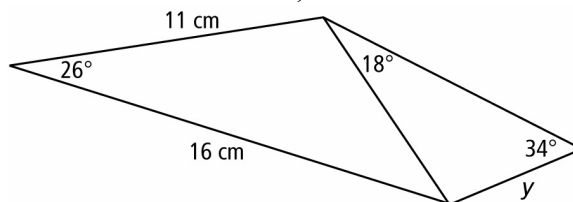
**9.** An angle of 280°, when drawn in standard position, would terminate in quadrant $\square$.

**10.** The exact value of tan 45° is $\square$.

**11.** The exact value of cos 270° is $\square$.

**Written Response**

**12.** A sqare table in a banquet hall can seat four people. If two tables are placed end to end, six people can be seated. If three tables are placed end to end, eight people can be seated.

  **a)** Write the general equation of the arithmetic sequence that represents the number of people seated at $n$ tables.

  **b)** Sketch a graph of the arithmetic sequence.

  **c)** Rewrite the general equation of the arithmetic sequence in function notation. Describe the relationship between the arithmetic sequence and the slope of the graph of the function.

  **d)** When comparing the arithmetic sequence to the function notation, the graph of $t_n$ is not exactly the same as the graph of $f(n)$. Provide a reason to explain why this statement is true.

**13.** The terminal arm of angle $\theta$ passes through the point R(–15, –8).

  **a)** Determine the distance from the origin to point R.

  **b)** Determine the exact value of sin $\theta$ to the nearest tenth of a degree?

**14.** In $\triangle$ABC, $\angle A = 40°$, $a = 10$ cm, and $b = 15$ cm.

  **a)** Determine algebraically the number of possible triangles that can be drawn, or whether the triangle does not exist.

  **b)** Sketch a diagram to represent the possible triangles.

  **c)** If the triangle exists, determine the measure of $\angle B$ to the nearest tenth of a degree.