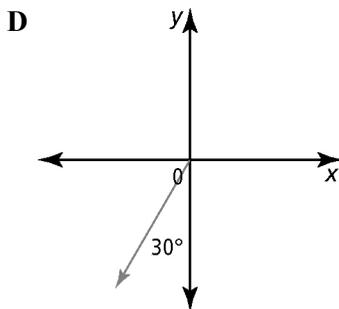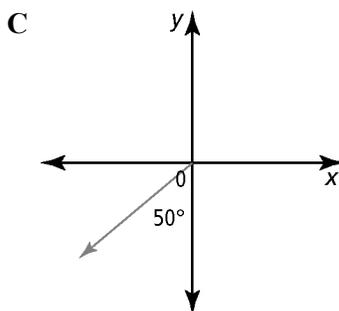# Chapter 2 Test
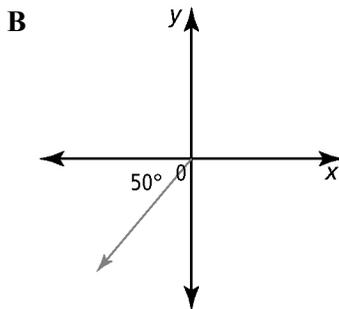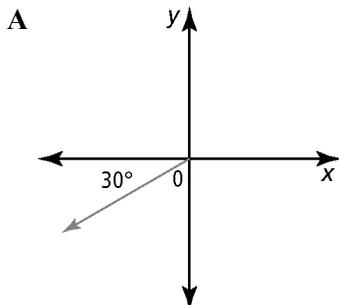
**Multiple Choice**

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

1. Which diagram represents an angle of 230° in standard position?

   A
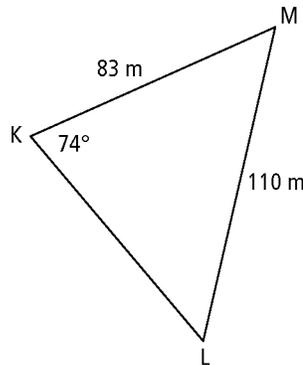
   

   B

   

   C

   

   D

   

2. Which expression does not have a value of 1?

   A $\cos 0°$     B $\cos 180°$

   C $\sin 90°$     D $\tan 225°$

3. The point N(4, –8) is on the terminal arm of angle θ. What is the exact value of sin θ?

   A $\dfrac{2}{\sqrt{5}}$   B $-\dfrac{1}{2\sqrt{3}}$   C $-\dfrac{2\sqrt{5}}{5}$   D $\dfrac{3}{2\sqrt{3}}$

4. Three students recorded the first step of their reasoning to solve △KLM.

   

   | Devin |
   |---|
   | Begin by using the sine law, since you are given two sides and an angle opposite one of the sides. |

   | Andy |
   |---|
   | Begin by using the cosine law, since you are given two sides and their included angle. |

   | Cathy |
   |---|
   | Begin by using the primary trigonometric ratio of cosine, since you are given the hypotenuse and adjacent sides. |

   Which of the following statements about the students' reasoning is true?

   A Both Andy and Cathy gave a correct statement.

   B Both Devin and Cathy gave a correct statement.

   C Only Andy gave a correct statement.

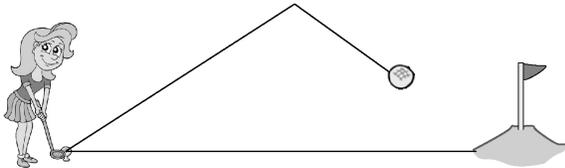   D Only Devin gave a correct statement.

**5.** For △ABC suppose you are given the measure of ∠A and the lengths of sides *a* and *c*. Under which of the following conditions would there be two possible solutions?
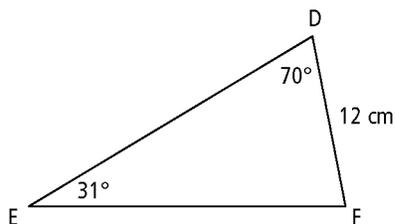
**A** $c > a > c \sin A$    **B** $a > c$ or $a < b$

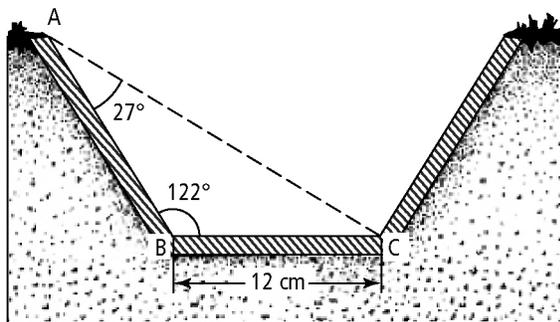**C** $a < c \sin A$    **D** $a = c \sin A$

**Short Answer**

**6.** Amanda is playing a virtual golf game. The distance from the tee box to the hole is 190 yd. Her first shot was 160 yd long, but was 15° off a direct line to the hole. Amanda's second shot (taken from where her first shot landed) was aimed at the hole, but it was only 45 yd long, and landed short of the hole. How far is it from where her second shot landed to the hole, to the nearest tenth of a yard?



**7.** Determine the length of EF, to the nearest tenth of a centimetre.



**8.** The diagram shows the cross section of a ditch that drains water from the eavestroughs of a building. What is the length of AB, to the nearest centimetre?



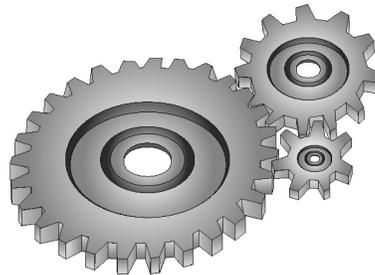**9.** Determine the exact value for each expression.

**a)** tan 300°   **b)** cos 210°   **c)** sin 135°

**10.** A surveyor uses a wide-angle camera to take a picture of a rock painting.
   **a)** If the camera's angle of view, 160°, is an angle in standard position, what would the measure of the reference angle be?
   **b)** What other angles between 0° and 360° would have the same reference angle?

**Extended Response**

**11.** A gear system inside a toy consists of three circular gears. The radii to the outer rim of the three gears are 4 cm, 2 cm, and 1 cm, respectively.



   **a)** Sketch and label a diagram representing the distances between the centres of the gears.
   **b)** What are the measures of the angles between the centres of the gears, to the nearest tenth of a degree?

**12.** A solar panel rests on a 12-ft beam anchored in the ground. To maximize the efficiency of the solar panel, the beam must be at an angle of 38° from the ground. One end of an 8-ft beam will be used to support the free end of the 12-ft beam, and the other end will be anchored in the ground. What are the two possible distances, to the nearest tenth of a foot, from the base of the 12-ft beam that the 8-ft beam can be anchored?