Los Medanos College

Practice Geometry Challenge Exam

Please Read Carefully

Passing of the challenge exam allows you to take any course that states "Prerequisite: Math 26 or Equivalent." You will not receive units or a grade for passing the exam.

Exam Information

Time: 90 Minutes.

When/Where: The exam is scheduled individually in MA 107. Please contact the Math Lab Coordinator at **(925) 439-2181 ext 3470 (8am –5pm)** or **ext 3358 (5pm – 9pm)** in order to make an appointment.

Appointment Date and Time: _____

Topics: Properties of triangles, intersecting lines, angles, various shapes (ie, parallelograms, trapezoids, et al.), area of triangles and circles, volume of solids (ie, pyramids, cylinders, et al.), as well as proofs.

Preparation: Review the above topics using a geometry textbook. Textbooks can be checked out from the LMC Library with a student ID.

You may use: Scientific calculator, pencil, and eraser; scratch paper will be provided.

Identification: Photo ID required - Drivers License/CA ID or a Passport.

Results: Available within 1 week.

Repeat Attempts: Exam may be taken a total of 2 times.

1. The measure of one angle of a parallelogram is 35°. Find the measure of the other angles.

2. The measure of the vertex angle of an isosceles triangle is 70°. Find the measure of the base angles.

3. Find the measure of the interior angles of a regular 5-gon.

4. The lengths of two sides of a right triangle are 4 inches and 6 inches. Find the length of the hypotenuse.

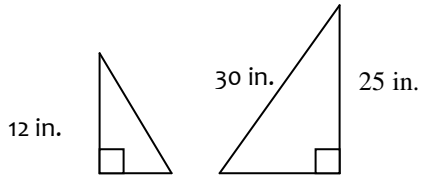
5. The measure of one angle of a right triangle is 40°. Find the measure of the other angles.

6. Find the area of the square with a diagonal of length 16 ft.

7. Find the area of the equilateral triangle with side length of 10 yds.

8. The side opposite the 60° angle has a length of 9 m. Find the length of the hypotenuse of the right triangle.

9. Given the two similar right triangles below, find:

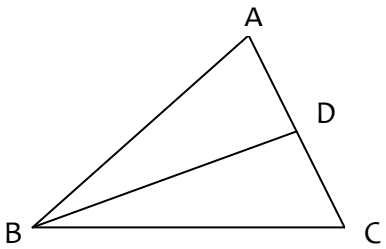


a. the area of the larger triangle.

b. the hypotenuse of the smaller triangle.

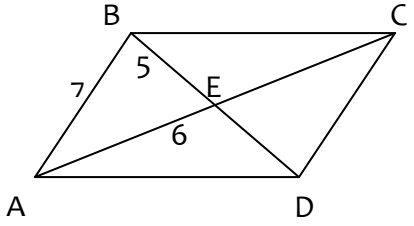
10. Complete the proof by filling in the reasons.

Given: $\overline{AB} \cong \overline{BC}$; D is the midpoint of $\overline{AC}$.
Prove: $\Delta ABD \cong \Delta CBD$.



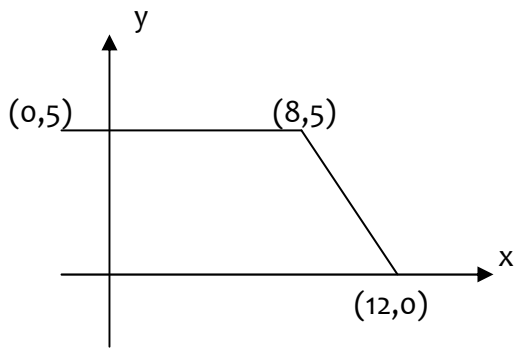
Statement	Reason
1. $\overline{AB} \cong \overline{BC}$; D is the midpoint of $\overline{AC}$	1.
2. $\overline{AD} \cong \overline{CD}$	2.
3. $\overline{AB} \cong \overline{AB}$	3.
4. $\Delta ABD \cong \Delta CBD$	4.

11. If ABCD is a parallelogram, what is the length of segment BD?



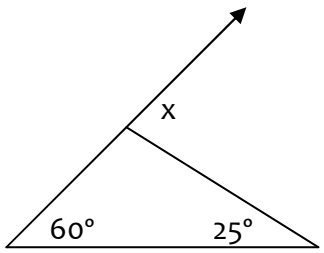
12. A right circular cone has radius 5 inches and height 8 inches.
What is the lateral area of the cone? (lateral area of cone $= \pi rl$, where l = slant height).

13. What is the area, in square units, of the trapezoid shown below?

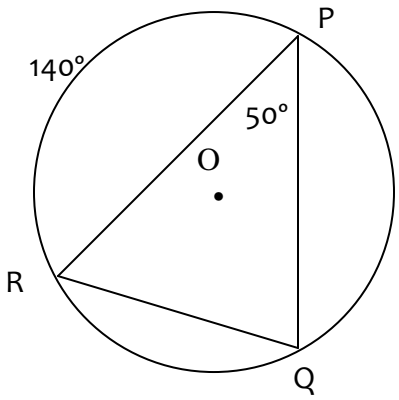


14. Lea made two candles in the shape of right rectangular prisms. The first candle is 15 cm high, 8 cm long, 8 cm wide. The second candle is 5 cm higher but has the same length and width. How much additional wax was needed to make the taller candle?

15. What is the $m\angle x$?

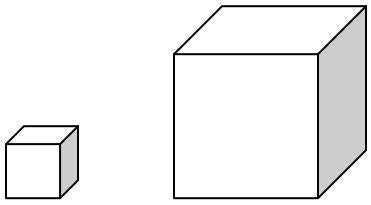


16. In the circle shown below, the measure of arc PR = 140° and the measure of ∠RPQ = 50°. What is the measure of arc PQ?



17. Find the area of the circular garden, where the length of the fence around the garden is 62.8m. Round your answer to 1 decimal place.

18. These two boxes are similar shape, and the ratio of similarity of box S to box T is 1:3. The dimensions of box S are 3m by 2m by 4m.



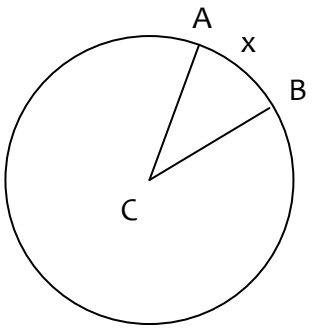
Box S Box T

a) Find the volume of box S

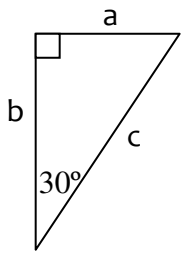
b) Find the total surface area of box S

c) Find the volume of box T

19. Find the length of arc AB, where the circle, center C, has a radius 9 cm, and angle ACB is 30°. State the exact answer.



20. If $a = 3\sqrt{3}$ in the right triangle below, what is the value of b?



Solutions

1) 35°, 145 °, 145 ° 2) 55 °, 55 ° 3) 108 ° 4) $2\sqrt{13} \approx 7.2111$

5) 50 ° 6) 128 ft^2 7) $25\sqrt{3} \approx 43.3013$ yds^2

8) $6\sqrt{3} \approx 10.3923$ m^2 9) a. $\frac{125\sqrt{11}}{2} \approx 207.289$ in^2 b. 14.4 in^2

10) 1. Given, 2. Definition of Midpoint, 3. Reflexive Property, 4. SSS

11) 10 12) $5\pi\sqrt{89} = 148.1886$ 13) 50

14) 320 cm^3 15) 85° 16) 120° 17) 313.8 m^2

18) a) 24m^3, b) 52m^2, c) 648m^2 19) 3/2 π 20) 9