Name _____   Date _____

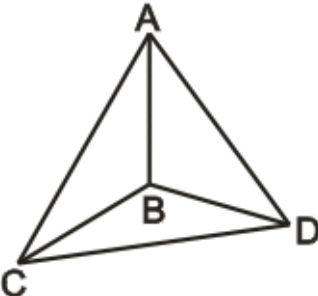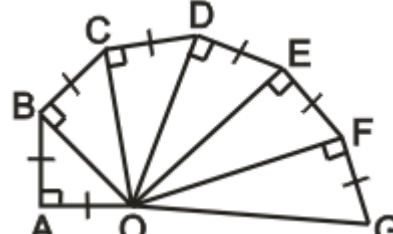**1.** The length of the hypotenuse of a right isosceles triangle is 20. What is the length of a leg of the isosceles triangle?

- Ⓐ 20
- Ⓑ $10\sqrt{3}$
- Ⓒ $20\sqrt{2}$
- Ⓓ $10\sqrt{2}$
- Ⓔ 10

2. Triangle ABC is a 45°-45°-90° triangle with C at the right angle. If AC = 4, find BC.

- Ⓐ $4\sqrt{3}$
- Ⓑ $8\sqrt{2}$
- Ⓒ 8
- Ⓓ $4\sqrt{2}$
- Ⓔ 4

Enter answers in text boxes.

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3. A right triangle is inscribed in a circle with radius 10. What is the perimeter of the triangle if the length of the hypotenuse is twice as long as the shorter leg?

4. In △ABC, m∠A = 30° and m∠C = 90°. If the length of BC is six more than one-fourth of AB, find the length of the longer leg of the triangle.

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5. In the 3-D figure below, angles ABC, ABD and CBD are all right angles. If m∠ACB = 30°, m∠DAB = 45°, and BD = 20, find the perimeter of △BCD.

6. If OA = 3, then OG = _____.

- Ⓐ 9
- Ⓑ $3\sqrt{7}$
- Ⓒ $3\sqrt{6}$
- Ⓓ $3\sqrt{5}$
- Ⓔ $6\sqrt{2}$

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7. In △ABC, AC = 3x − 18, BC = 7x − 86, and m∠C = 90°. Find the value of x that makes △ABC a right isosceles triangle.

8. Circle O is inscribed in a 45°-45°-90° triangle with perimeter 24. What is the radius of the circle?

9. Cable is needed to support a 15-foot vertical pole. The angle between the pole and the cable is to be 30 degrees. Find the length of the cable.	10. What are the lengths of the two legs of a 30°-60°-90° right triangle if the length of its hypotenuse is $20\sqrt{3}$?
11. A baseball diamond is in the shape of a square, with the distance between consecutive bases of 90 feet. The second baseman wants to make an out at home plate. How far must he throw the ball?	12. A regular hexagon is composed of 12 congruent 30°-60°-90° triangles. If the length of the hypotenuse of one of those triangles is $17\sqrt{5}$, find the perimeter of the hexagon.
13. In triangle ABC, the ratio of the measure of angle A to angle B is 1:3. The measure of angle C is half the sum of the measures of angles A and B. If AC = 12, find BC. Ⓐ $6\sqrt{3}$ Ⓑ $12\sqrt{2}$ Ⓒ $12\sqrt{3}$ Ⓓ $6\sqrt{2}$ Ⓔ 6	14. In △ABC, the measure of angle B is twice the measure of angle A. Angle C measures three times the measure of angle A. If AC = 38, find AB. Ⓐ 19 Ⓑ $38\sqrt{3}$ Ⓒ 38 Ⓓ $19\sqrt{3}$ Ⓔ $19\sqrt{2}$
15. In △ABC, the ratio of AB:BC:CA = 1:2:$\sqrt{3}$. Find the measure of ∠A. Ⓐ 30° Ⓑ 60° Ⓒ 45° Ⓓ 90°	16. Seven 45°-45°-90° triangles share one vertex. The hypotenuse of one triangle is the leg of the neighboring triangle. If the length of the hypotenuse of the first (also the smallest) triangle is r, express the length of the hypotenuse of the fifth triangle in terms of r.
17. The diagonal of a square box top is 10 feet. Find the length of a side of the box top.	18. In △ABC, m∠A = 30° and m∠C = 90°. If BC is 7 less than AB, find the length of the hypotenuse.