

1. If the lengths of two sides of a triangle measure 7 and 12, the length of the third side could measure?

- (1) 16 (2) 19 (3) 3 (4) 5

2. Which line is perpendicular to the line whose equation is $5y + 6 = -3x$?

(1) $y = -\frac{5}{3}x + 7$

(2) $y = \frac{5}{3}x + 7$

(3) $y = -\frac{3}{5}x + 7$

(4) $y = \frac{3}{5}x + 7$

$5y = -3x - 6$

$y = -\frac{3}{5}x - \frac{6}{5}$

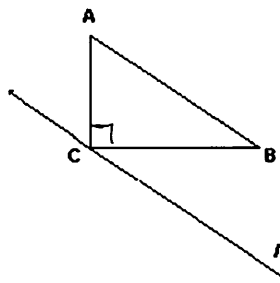
3. Which type of triangle will have its incenter, orthocenter, circumcenter and centroid at the same point?

- (1) right
 (2) obtuse
 (3) scalene
 (4) equilateral

4. Which phrase describes the graph of $y = -1$ on the coordinate plane?

- (1) a line parallel to the y -axis and 1 unit to the right of it
 (2) a line parallel to the y -axis and 1 unit to the left of it
 (3) a line parallel to the x -axis and 1 unit below it
 (4) a line parallel to the x -axis and 1 unit above it

5.



In the diagram of right triangle ABC with the right angle at C , line l is drawn through C and is parallel to AB . If $\triangle ABC$ is reflected in line l , forming the image $\triangle A'B'C'$, which statement is *not* true?

- (1) C and C' are the same point.
 (2) $m\angle ABC = m\angle A'B'C'$
 (3) The area of $\triangle A'B'C'$ is twice the area of $\triangle ABC$.
 (4) Line l is equidistant from A and A' .

6. The ratio of the measures of the angles of a triangle is 2:3:5. Find the measure of the *smallest* angle of the triangle.

- (1) 9 $10x = 180$
 (2) 18 $x = 18$
 (3) 36
 (4) 54

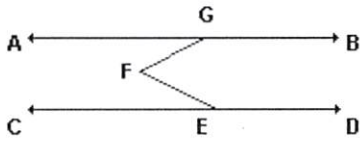
7. Which statement is expressed as a biconditional?

- (1) Two angles are congruent if they have the same measure.
 (2) If two angles are both right angles, then they are congruent.
 (3) Two angles are congruent if and only if they have the same measure.
 (4) If two angles are congruent, then they are both right angles.

Short Answer

Please show all work on a separate piece of paper and/or graph paper.

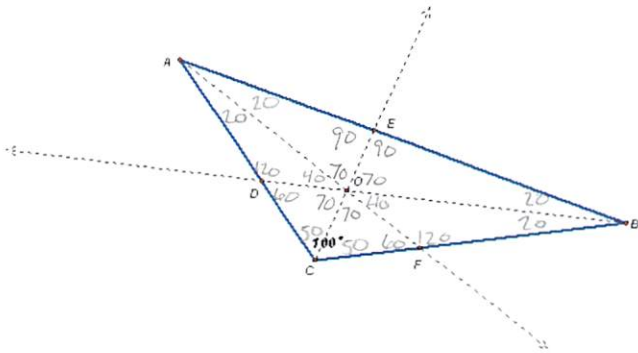
8. In the diagram: $\overleftrightarrow{AGB} \parallel \overleftrightarrow{CED}$, $m\angle AGF = 30$, and $m\angle CEF = 45$. What is $m\angle GFE$?



9. In $\triangle ABC$, $m\angle A = 55$ and $AC < BC$. Which angle is the *largest* angle of the triangle?

10. Triangle ABC has vertices $A(3, 3)$, $B(7, 9)$, and $C(11, 3)$. Determine the point of intersection of the medians, and state its coordinates.

11. Given that point O is the incenter of isosceles triangle ABC and that the vertex angle C measures 100° .



Find:

$m\angle BOE =$

$m\angle ADB =$

$m\angle AFC =$

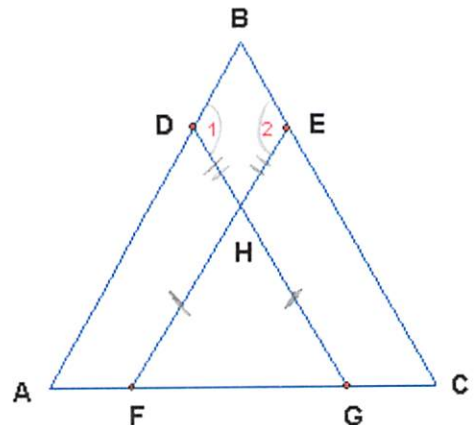
12. After a translation that shifts (x, y) to $(x + 2, y - 2)$, the image of point $B(-3, 0)$ lies in which Quadrant?

13. Write the equation for the perpendicular bisector of the line segment whose endpoints are $(-1, 1)$ and $(7, -5)$?

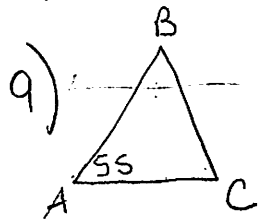
14. The midpoint of \overline{AB} is M . If the coordinates of A are $(2, -6)$ and the coordinates of M are $(5, -1)$, what are the coordinates of B ?

15. **Given:** $\overline{FH} \cong \overline{HG}$, $\overline{DH} \cong \overline{HE}$, $\sphericalangle 1 \cong \sphericalangle 2$

Prove: $\sphericalangle A \cong \sphericalangle C$



$$8) \boxed{m \angle GFE = 75^\circ}$$



$\boxed{\text{Longest } \angle \text{ is } \angle C}$

$$10) M_{AB} = (5, 6)$$

$$C = (11, 3)$$

$$m = \frac{3-6}{11-5} = -\frac{1}{2}$$

$$y - 6 = -\frac{1}{2}(x - 5)$$

$$y = -\frac{1}{2}x + \frac{17}{2}$$

$$M_{BC} = (9, 6)$$

$$A = (3, 3)$$

$$m = \frac{3-6}{6-3} = \frac{1}{2}$$

$$y - 3 = \frac{1}{2}(x - 3)$$

$$y = \frac{1}{2}x + \frac{3}{2}$$

$$\boxed{(7, 5)}$$

$$-\frac{1}{2}x + \frac{17}{2} = \frac{1}{2}x + \frac{3}{2}$$

$$7 = x \quad y = 5$$

$$11) \boxed{m \angle BOE = 70^\circ}$$

$$\boxed{m \angle ADB = 120^\circ}$$

$$\boxed{m \angle AFC = 60^\circ}$$

$$12) B'(-1, -2)$$

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$$13) m = \frac{-5-1}{7+1} = \frac{-6}{8} = -\frac{3}{4}$$

$$m_{\perp} = \frac{4}{3}$$

$$M = (3, -2)$$

$$y + 2 = \frac{4}{3}(x - 3)$$

$$y + 2 = \frac{4}{3}x - 4$$

$$y = \frac{4}{3}x - 6$$

$$14. A: (2, -6)$$

$$M: (5, -1)$$

$$B: (8, 4)$$

15.	Statement	Reasons
	① $\overline{FH} \cong \overline{HG}$, $\overline{DH} \cong \overline{HE}$ $\angle 1 \cong \angle 2$	① Given
	② $\angle EFC \cong \angle DGA$	② If 2 sides of a Δ are \cong then the angles opp are \cong
	③ $\overline{FH} + \overline{HE} \cong \overline{GH} + \overline{HO}$	③ Addition prop. of equality
	④ $\overline{FE} \cong \overline{GO}$	④ Segment Addition Postulate
	⑤ $\angle 1$ and $\angle ADG$ are supp. $\angle 2$ and $\angle CEF$ are supp	⑤ Linear pairs are supp.
	⑥ $\angle ADG \cong \angle CEF$	⑥ If 2 \angle 's are supplements to $\cong \angle$'s then those \angle 's are \cong
	⑦ $\Delta ADG \cong \Delta CEF$	⑦ ASA
	⑧ $\angle A \cong \angle C$	⑧ CPCTC