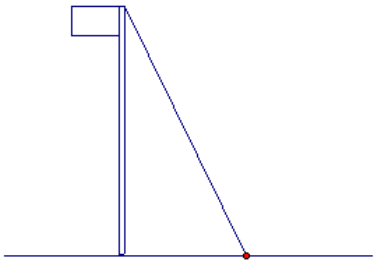
1. ΔWXY has vertices $W(-5, 5)$, $X(7, 4)$, and $Y(-1, -5)$. Use the distance formula to classify the triangle by its sides.

   A. Equilateral Triangle
   B. Isosceles Triangle
   C. Scalene Triangle
   D. Not a triangle

2. What is the coordinate of the midpoint M of $\overline{AB}$ whose endpoints have the coordinates -3 and 24?

   A. 8
   B. $10\frac{1}{2}$
   C. $13\frac{1}{2}$
   D. 27

3. The flagpole at a school is 36 feet tall. It is secured with a cable that is connected to the top of the pole and to the ground 15 feet away from the base of the pole. How long is the cable?

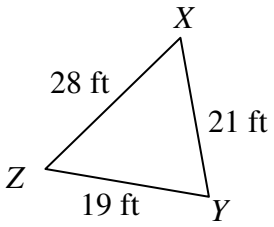


   A. 36 ft
   B. 37 ft
   C. 38 ft
   D. 39 ft

4. A ship leaves port at 7 am traveling due north at 8 km/hr. At 1 pm the ship changes course and travels due west at 9 km/hr. Approximately how far is the ship from its starting point at 9pm that evening?

   A. 86.5 km
   B. 78 km
   C. 52.5 km
   D. 12 km

5. List the angles in order from *least* to *greatest*.



A. $\angle X, \angle Y, \angle Z$
B. $\angle X, \angle Z, \angle Y$
C. $\angle Y, \angle X, \angle Z$
D. $\angle Z, \angle X, \angle Y$

6. Which equation below is parallel to the line $y = 3x - 4$ and has a y-intercept of 2?

A. $y = 3x + 2$
B. $y = 2x + 3$
C. $y = 3x + 4$
D. $y = -\frac{1}{3}x + 2$

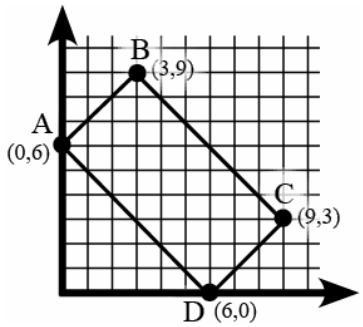
7. What type of quadrilateral is given by the points {(0, 3), (−1, 1), (2, 0), (3, 2)}?

A. Rectangle
B. Square
C. Parallelogram
D. Rhombus

8. The length of the hypotenuse of a 30-60-90 triangle is 22 meters. Find the length of the side opposite the 30° angle.

A. 11 m
B. 19.1 m
C. 38.1 m
D. 44 m

9. By the definition of a parallelogram, $\overline{AB}$ and $\overline{CD}$ must have both the same length and the same slope. What are the lengths and slopes of $\overline{AB}$ and $\overline{CD}$?



A. length = $3\sqrt{2}$; slope = -1

B. length = $3\sqrt{2}$; slope = 1

C. length = $6\sqrt{2}$; slope = -1

D. length = $6\sqrt{2}$; slope = 1

10. The slopes of the sides of a parallelogram must be _____.

A. perpendicular for all sides of the parallelogram.

B. the same for opposite sides of the parallelogram.

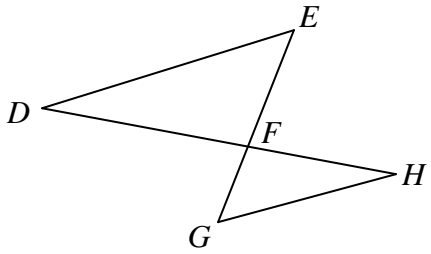
C. the same for all sides of the parallelogram.

D. the opposite of the adjacent sides of the parallelogram.

11. If $\Delta HIJ \cong \Delta PQR$ and $HI = 31$, $IJ = 21$, and $QR = 4x + 5$, what is the value of x?

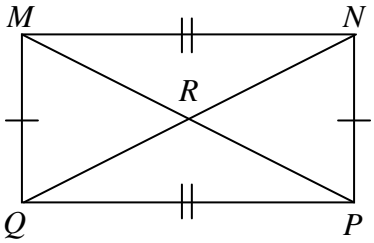
A. 4
B. 6.25
C. 9
D. 11.5

12. In the diagram shown below, ΔDEF is similar to ΔHGF. If $DF = 15$, $FE = 12$, and $FG = 8$, what is the measure of FH?



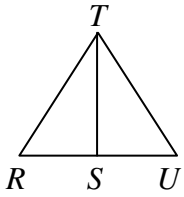
A. 6.4
B. 8
C. 10
D. 22.5

13. Which postulate can be used to prove $\Delta MPQ \cong \Delta PMN$?



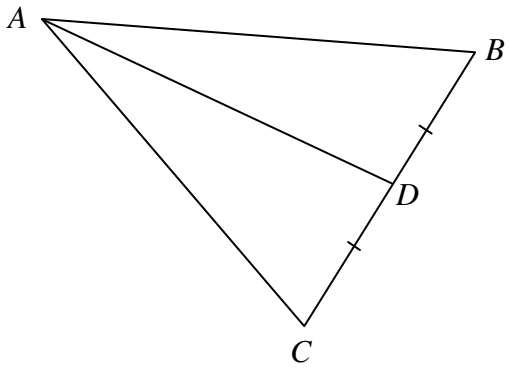
A. SSS
B. SAS
C. ASA
D. AAS

14. ΔTUR is an equilateral triangle with altitude $\overline{TS}$. If $TS = 5$, what is TR?



A. 10
B. $5\sqrt{3}$
C. $\frac{10}{\sqrt{3}}$
D. $\frac{5}{\sqrt{3}}$

15. In ΔACB shown below, what is the name of segment $\overline{AD}$?



A. Angle Bisector
B. Altitude
C. Median
D. Perpendicular Bisector

16. What is the distance between the point (4, 7) and the point (1, 3)?

A. $\sqrt{7}$
B. 5
C. 7
D. $5\sqrt{5}$

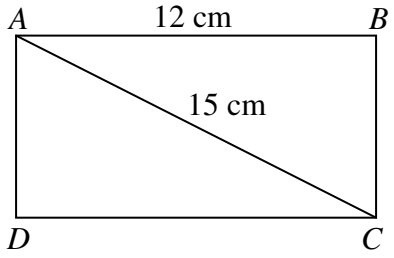
17. Isaiah was asked to prove the statement…

"If two lines do not intersect, then they are parallel" is always true.

What is one example Isaiah could use to show that this statement could be false?

A. auxiliary lines
B. coplanar lines
C. perpendicular lines
D. skew lines

18. In rectangle *ABCD* the diagonal is 15 cm and *AB* = 12 cm. What is *BC*?

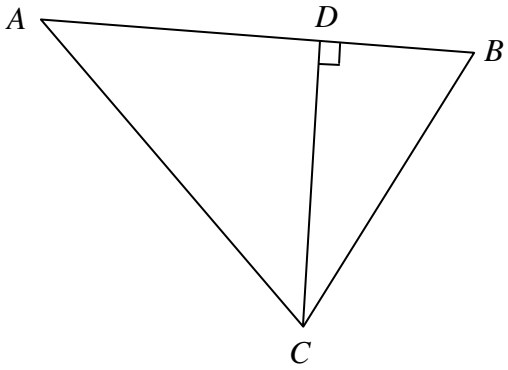


A. 3 cm
B. 5 cm
C. 9 cm
D. 10 cm

19. What are the coordinates of the mid-point of a line segment whose endpoints are (5, –2) and (–4, 4)?

A. $(\frac{1}{2}, 1)$
B. (1, 2)
C. (1, 1)
D. $(\frac{9}{2}, 6)$

20. In Δ*ACB* shown below, what is the name of segment $\overline{CD}$?



A. Angle Bisector
B. Altitude
C. Median
D. Perpendicular Bisector

21. A medical helicopter is located 30 miles north and 20 miles west of the city center, (30, 20). It needs to travel to an accident located 25 miles south and 40 miles east of the city center, (–25, –40). What distance must the helicopter travel? Round your answer to the nearest tenth.

A. 20.6 miles
B. 24.0 miles
C. 81.4 miles
D. 83.2 miles

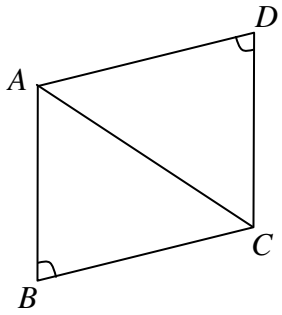
22. In ΔSTU, $m\angle STU = 60°$ and $m\angle TUS = 90°$. If $ST = 56$ ft, what is TU?

A. 112 ft
B. $56\sqrt{3}$ ft
C. $\frac{56}{\sqrt{3}}$ ft
D. 28 ft

23. ΔXYZ is a right triangle with $m\angle ZXY = 45°$. If the hypotenuse is 7 meters in length, what is the length of the legs?

A. $\frac{7}{\sqrt{2}}$ m
B. 3.5 m
C. 7 m
D. $7\sqrt{2}$ m

24. If $\angle ABC \cong \angle ADC$ and $\overline{AD}$ is parallel to $\overline{BC}$, which postulate can be used to prove $\Delta ABC \cong \Delta CDA$?

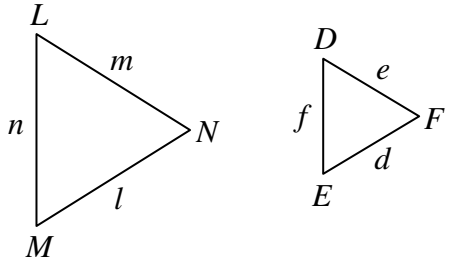


A. SSS
B. SAS
C. ASA
D. AAS

25. Two trees are growing on a flat piece of ground at 90° angles from the ground. The smaller tree is 13 feet tall and casts a shadow 11 feet long. At the same time of day, if the larger tree casts a shadow 16 feet long, approximately how tall is the larger tree?

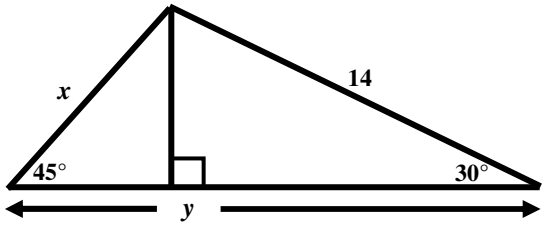
A. 13.5 feet
B. 17.9 feet
C. 18.9 feet
D. 20.5 feet

26. Which postulate can be used to prove ΔLMN is similar to ΔDEF if $\angle EDF \cong \angle MLN$ and $\frac{e}{m} = \frac{f}{n}$?



A. AA Similarity
B. SSS Similarity
C. SAS Similarity
D. The triangles are not similar

27. Find the value of x and y.



A. $x = 9.9$, $y = 19.1$

B. $x = 9.9$, $y = 57.4$

C. $x = 19.8$, $y = 19.1$

D. $x = 19.8$, $y = 57.4$

28. Find the distance and midpoint for the line with endpoints (2, 3) and (−3, −3).

A. Distance $= \sqrt{5}$; Midpoint = (2, −3)

B. Distance =1; Midpoint = (2, −3)

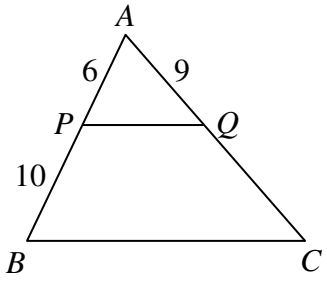
C. Distance $= \sqrt{61}$; Midpoint = $\left(-\frac{1}{2}, 0\right)$

D. Distance = 61; Midpoint = $\left(-\frac{1}{2}, 0\right)$

29. The bases on a baseball diamond are 90 ft apart. Angles from one base to the next are 90°. What is the distance from home plate to second base in a straight line?

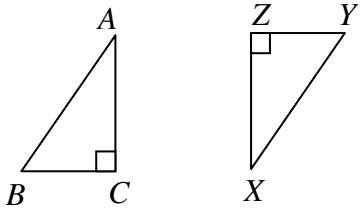
A. About 127 ft
B. About 19 ft
C. About 13 ft
D. About 162 ft

30. If $\overline{PQ}$ is parallel to $\overline{BC}$, what is AC?



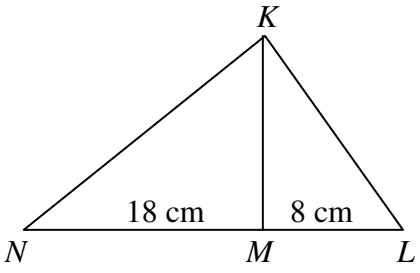
A. 9
B. 10
C. 15
D. 24

31. If $\Delta ABC \cong \Delta XYZ$, which angle in ΔABC corresponds to $\angle YXZ$?



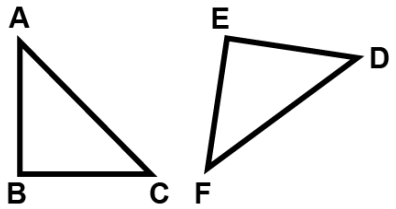
A. $\angle ACB$
B. $\angle CBA$
C. $\angle CAB$
D. $\angle BCA$

32. ΔKLN is a right triangle where $m\angle LKN = 90°$, and $\overline{KM}$ is perpendicular to $\overline{NL}$. What is KM?



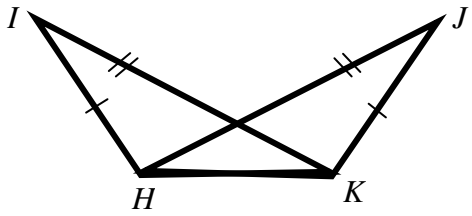
A. 9 cm
B. 10 cm
C. 11 cm
D. 12 cm

33. In $\triangle ABC$ and $\triangle DEF$, $\angle A \cong \angle D$, $\angle B \cong \angle E$, and $\angle C \cong \angle F$. Can $\triangle ABC$ and $\triangle DEF$ be proven congruent?



A. Yes, *AAA* is a valid test for triangle congruence.
B. No, *AAA* is not a valid test for triangle congruence.
C. Yes, *ASA* is a valid test for triangle congruence.
D. No, *ASA* is not a valid test for triangle congruence.

34. Refer to the figure below. Give a congruence statement for two triangles in the figure and name the theorem or postulate that proves the congruence.



A. $\triangle HJK \cong \triangle KIH$ by the SSS Postulate
B. $\triangle HJK \cong \triangle KIH$ by the SAS Postulate
C. $\triangle HJK \cong \triangle KIH$ by the ASA Postulate
D. None of these

35. What is the distance from Mary's house to the school if a coordinate grid shows Mary's house at (−2, 6) and the school at (5, 30)?

A. $3\sqrt{145}$
B. 31
C. $3\sqrt{65}$
D. 25