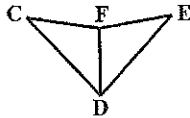


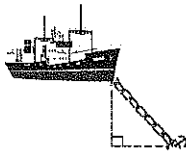
- 1 Given: \overline{DF} bisects $\angle CDE$
 $\angle CFD \cong \angle EFD$



Which postulate or theorem can be used to prove $\triangle CDF \cong \triangle EDF$?

- A AAS
 B ASA
 C SAS
 D SSS
-
- 2 A ship's anchor rests on the sea floor 72 feet below the surface. The angle of elevation from the anchor to the ship is 47° . Approximately how long is the anchor chain?

- A 53 feet
 B 67 feet
 C 98 feet
 D 106 feet

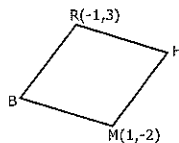


- 5 A tipping platform is a ramp used to unload trucks.



Approximately how high is the end of an 80 foot ramp when it is tipped by a 30° angle?

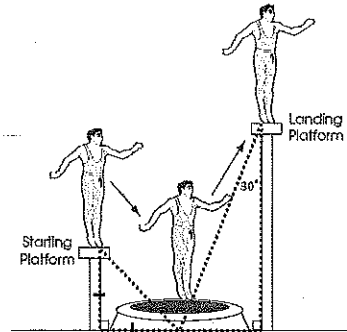
- A 40 ft
 B 46 ft
 C 57 ft
 D 69 ft
-
- 6 Points $R(-1, 3)$ and $M(1, -2)$ are vertices of rhombus RHMB.



What is the slope of diagonal \overline{BH} ?

- A $-\frac{5}{2}$
 B $\frac{5}{2}$
 C $-\frac{2}{5}$
 D $\frac{2}{5}$

- 3 A circus acrobat uses a trampoline and two platforms for part of his act, as shown.

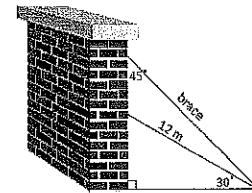


The starting platform has a height of 5 feet. The height of the landing platform can be found by doubling the height of the starting platform and then adding 2 feet. Approximately how far apart are the two platforms?

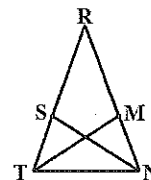
- A 7 feet
 B 9 feet
 C 11 feet
 D 12 feet
-
- 4 A pole is supported by a wire that is 20 feet long. If the wire is attached to the ground 11 feet from the base of the pole, approximately what angle does the wire make with the ground?
- A 29°
 B 33°
 C 57°

- 7 Mr. Taylor placed a 12 meter brace against the wall at a 30° angle with the ground. He placed another brace at a 45° angle as shown below. Approximately how much higher on the wall does the longer brace reach than the shorter brace?

- A 2 meters
 B 4 meters
 C 10 meters



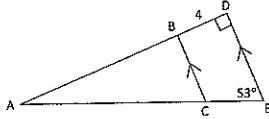
- 8 Given: $\overline{RS} \cong \overline{RM}$



What additional piece of information is needed to prove $\triangle RSN \cong \triangle RMT$ by ASA?

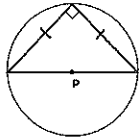
- A $\overline{SN} \cong \overline{MT}$
 B $\overline{RT} \cong \overline{RN}$
 C $\angle RSN \cong \angle RMT$
 D $\angle STM \cong \angle MNS$

- 9 Given: $\overline{BC} \parallel \overline{DE}$
 $AD = 14$



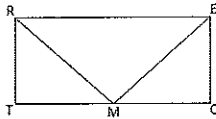
Find the approximate length of \overline{BC} .

- A 7.5
 B 12.5
 C 13.3
 D 16.6
-
- 10 An isosceles right triangle is inscribed in a circular stained glass window. The radius of Circle P is 6 inches.



Find the perimeter of the isosceles right triangle.

- A 24 inches
 B 36 inches
 C $6 + 12\sqrt{2}$ inches
 D $12 + 12\sqrt{2}$ inches
-
- 13 Given: Rectangle RECT
 M is the midpoint \overline{TC}



Which postulate or theorem can be used to prove $\triangle RTM \cong \triangle ECM$?

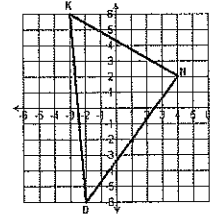
- A SSS
 B SAS
 C ASA
 D AAS
-
- 14 From the top of a lighthouse, the angle of depression of a boat out at sea is 61° . Find the height of the lighthouse to the nearest foot if the distance from the boat to the foot of the lighthouse is 86 feet.

- A 155 feet
 B 75 feet
 C 48 feet
 D 42 feet

- 11 When graphed, the equation $3x + 7y = 47$ contains one side of a rectangle. Which of the following sets of points could be vertices of the opposite side?

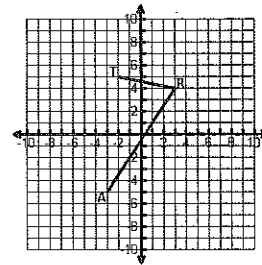
- A $(-9, -6)$ and $(-2, -9)$
 B $(4, 5)$ and $(-2, -9)$
 C $(4, 5)$ and $(1, -2)$
 D $(9, -6)$ and $(2, 3)$

- 12 $\triangle KND$ is graphed on the grid below.



Write an equation of the line containing the median from K to \overline{ND} .

- A $y = 2x$
 B $y = -2x + 1$
 C $y - 6 = -2(x + 3)$
 D $y + 2 = 2(x - 1)$
-
- 15 A portion of isosceles trapezoid TRAP is shown on the grid below:

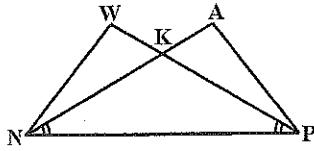


Which of the following equations contains vertex P to complete isosceles trapezoid TRAP?

- A $y - 5 = -\frac{2}{3}(x + 2)$
 B $y - 5 = \frac{3}{2}(x - 2)$
 C $y = \frac{2}{3}x + 8$
 D $y = \frac{3}{2}x + 8$
-
- 16 Carrie is creating a logo in the shape of an isosceles triangle whose legs measure 17 cm each and whose base is 16 cm. What is the length of the altitude from the vertex to the base of the triangular logo?

- A 5.7 cm
 B 15 cm
 C 18.8 cm
 D 24 cm

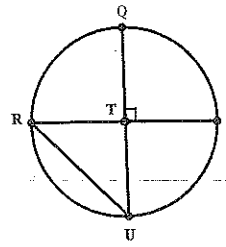
- 17 Given: $\angle ANP \cong \angle WPN$
 $\overline{WP} \cong \overline{AN}$



Which postulate or theorem can be used to prove $\triangle WPN \cong \triangle ANP$?

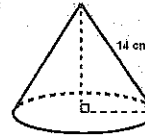
- A ASA
- B SSS
- C SAS
- D AAS

1. The diameter of Circle T is 10 units. Find RU .



- A $10\sqrt{3}$
- B $10\sqrt{2}$
- C $5\sqrt{3}$
- D $5\sqrt{2}$

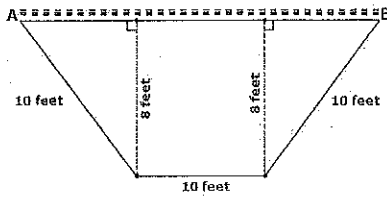
2. The height of the cone below is 11 cm.



What is the approximate radius of the cone?

- A 3 cm
- B 8.7 cm
- C 25 cm
- D 17.8 cm

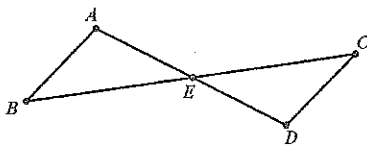
3. The Children's Hospital is organizing a charity auction. The picture below shows the area that will be used for seating. A rope is used to separate the seating area from the stage.



How long is the rope from Point A to Point B?

- A 12 feet
- B 16 feet
- C 22 feet
- D 36 feet

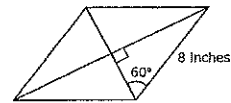
4. Given: E is a midpoint of \overline{AD} .
 $\angle ABC \cong \angle BCD$



Which postulate or theorem can be used to prove $\triangle ABE \cong \triangle DCE$?

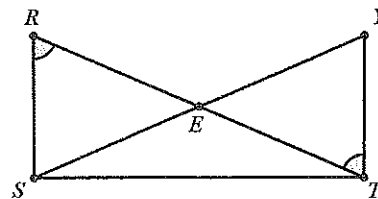
- A AAS
- B SAS
- C ASA
- D The triangles are not congruent.

5. Jerry wants to apply ribbon along each diagonal of a rhombus to be used as part of a design for a quilt. Find the exact length of ribbon that is necessary to decorate the rhombus.



- A $8\sqrt{3}$ inches
- B $4+4\sqrt{3}$ inches
- C $8+16\sqrt{3}$ inches
- D $8+8\sqrt{3}$ inches

6. Given: $\angle TRS \cong \angle RTY$



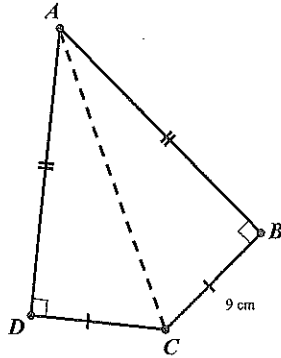
What additional piece of information is needed to prove $\overline{RS} \cong \overline{TY}$?

- A E is a midpoint of \overline{RT}
- B $\overline{RS} \parallel \overline{YT}$
- C $\angle RSY \cong \angle TYS$
- D $\overline{RS} \perp \overline{ST}$ and $\overline{YT} \perp \overline{ST}$

7. The shape of a new park in Sugar Land is an equilateral triangle. The city wants to construct a 50 foot sidewalk from the midpoint of one side of the triangle to the opposite vertex. What is the approximate perimeter of the park?

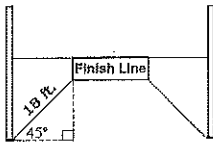
- A 300 feet
- B 212.1 feet
- C 173.2 feet
- D 150 feet

8. The perimeter of kite ABCD is equal to 42 centimeters. What is the length of \overline{AC} ?



- A 11 cm
- B 12 cm
- C 14 cm
- D 15 cm

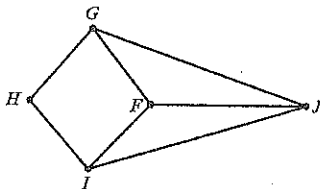
11. A banner is placed across the street to mark the finish line of The Houston Marathon as pictured below.



The support rope is 18 feet long from the bottom of the banner to the bottom of the pole. Approximately how high is the bottom of the banner from the street?

- A 9 feet
- B 12.7 feet
- C 18 feet
- D 25.5 feet

12. Given: $GFIH$ is a rhombus.



What additional piece of information is needed to prove $\triangle JFG \cong \triangle JFI$ by SAS?

- A $\overline{GJ} \cong \overline{JI}$
- B $m\angle JGF = m\angle JFI$
- C $m\angle JIF = m\angle GJF$
- D $m\angle JFG = m\angle JFI$

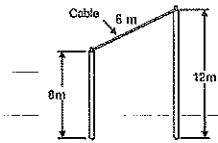
9. A dead tree was struck by lightning, causing it to fall over at a point on the ground 15 feet from the base of the tree.



If the fallen tree top forms a 34° angle with the ground, approximately how tall was the tree originally?

- A 10 feet
- B 18 feet
- C 28 feet
- D 31 feet

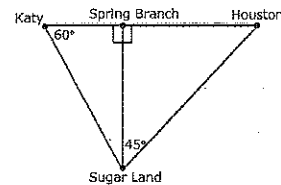
10. Two vertical poles are connected by a cable, as shown.



What is the approximate distance between the two poles?

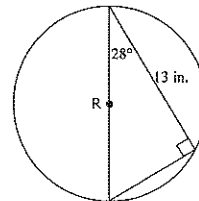
- A 4.47 m
- B 7.21 m
- C 10 m
- D 20 m

13. The distance from Spring Branch to Houston is approximately 18 miles. What is the approximate distance from Sugar Land to Katy?



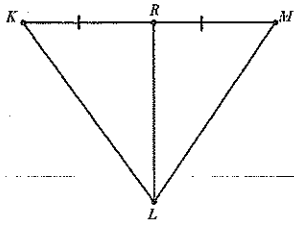
- A 10.4 miles
- B 18 miles
- C 21 miles
- D 25.5 miles

14. Find the approximate length of the diameter of Circle R.



- A 11.48 in.
- B 14.72 in.
- C 24.45 in.
- D 27.69 in.

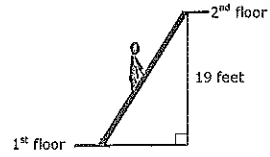
15. Look at the diagram below.



Which statement is needed as part of the given to prove $\triangle KRL \cong \triangle MRL$?

- A $\triangle KLM$ is isosceles
- B \overline{LR} bisects $\angle KLM$
- C R is a midpoint of \overline{KM}

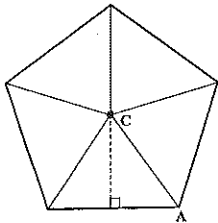
17. The 2nd floor of the mall is 19 feet above the 1st floor as shown below.



What is the approximate angle of elevation created by a 30 foot escalator from the 1st floor to the 2nd floor?

- A 32°
- B 39°
- C 51°

16. The length of radius \overline{CA} is 12 cm.



Find the approximate length of each side of the regular pentagon shown above.

- A 7.05 cm
- B 14.1 cm
- C 19.4 cm
- D 20.4 cm