Name: _____

1.

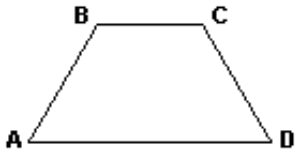


Figure 1

In the diagram of isosceles trapezoid $ABCD$, $AB = CD$. The measure of $\angle B$ is 40° more than the measure of $\angle A$. Find m$\angle A$ and m$\angle B$.

m$\angle A$ = [ ] and m$\angle B$ = [ ].

2.

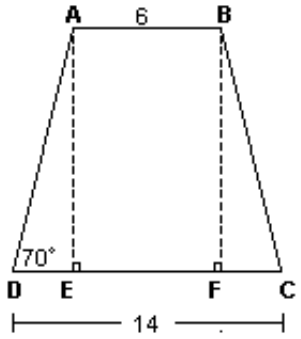


Figure 2

In isosceles trapezoid $ABCD$, m$\angle D = 70$, $AB = 6$, and $DC = 14$.

(a) DE = [ ] units.

(b) To the *nearest integer*, altitude AE = [ ] units.

(c) The area of trapezoid $ABCD$ = [ ] square units.

(d) To the *nearest integer*, AD = [ ] units.

3. [ ]

The sum of the measures of the interior angles of a hexagon is

A. 360° C. 720°
B. 540° D. 1280°

4.

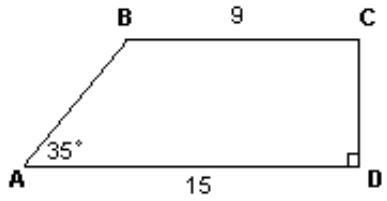


Figure 3

In the diagram of trapezoid *ABCD*, $\overline{CD} \perp \overline{AD}$, *BC* = 9, *AD* = 15, and m∠*A* = 35.

(a) To the *nearest tenth*, the area of *ABCD* is ☐ square units.

(b) To the *nearest tenth*, the perimeter of *ABCD* is ☐ units.

5.

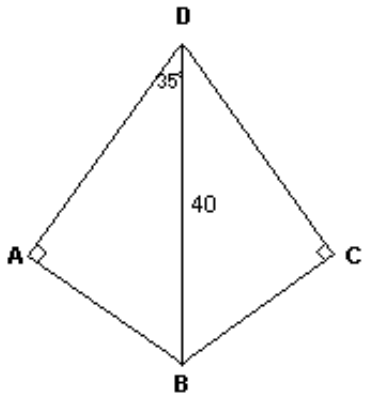


Figure 4

Quadrilateral *ABCD* is a kite with $\overline{AB} \cong \overline{BC}$, $\overline{AD} \cong \overline{CD}$, $\overline{AD} \perp \overline{AB}$, $\overline{DC} \perp \overline{BC}$, *DB* = 40, and m∠*ADB* = 35.

(a) To the *nearest integer*, *AB* = ☐ units.

(b) To the *nearest integer*, *AD* = ☐ units.

(c) To the *nearest integer*, the area of quadrilateral *ABCD* = ☐ square units.

6.

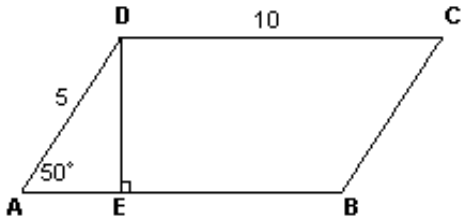


Figure 5

In the diagram of parallelogram $ABCD$, m$\angle A = 50$, $DC = 10$, and $AD = 5$. $\overline{DE}$ is an altitude.

(a) To the *nearest tenth*, $DE =$ [ ] units.

(b) To the *nearest tenth*, $AE =$ [ ] units.

(c) To the *nearest integer*, the area of $\Delta AED =$ [ ] square units.

(d) To the *nearest integer*, the area of trapezoid $DCBE =$ [ ] square units.

7. [ ]

The number of degrees in the measure of one exterior angle of a regular pentagon is

A. 72 C. 360
B. 108 D. 540

8. [ ]

If the measure of an exterior angle of a regular polygon is 45°, then the polygon is

A. a decagon
B. an octagon
C. a pentagon
D. a square

9.

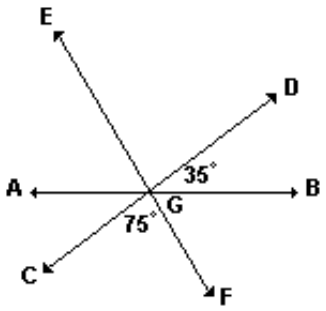


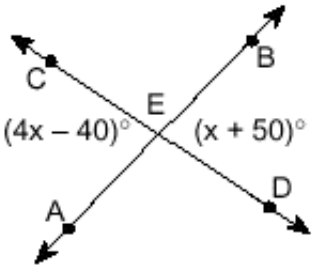
Figure 6

In the diagram, lines $\overleftrightarrow{AB}$, $\overleftrightarrow{CD}$, and $\overleftrightarrow{EF}$ intersect at *G*. If m∠*DGB* = 35 and m∠*CGF* = 75, find m∠*AGE*.

A. 35 C. 50
B. 45 D. 70

10.

In the accompanying diagram, $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ intersect at *E*.



If m∠*AEC* = 4*x* - 40 and m∠*BED* = *x* + 50, find the number of degrees in m∠*AEC*.

m∠*AEC* =

11.

A quadrilateral with four congruent sides and an angle measuring 60° must be a

A. rhombus C. rectangle
B. square D. trapezoid

12.

Which figure *cannot* have both pairs of opposite sides parallel?

A. parallelogram
B. rectangle
C. rhombus
D. trapezoid

13.

Which statement is *always* true?

A. Rhombuses are squares.
B. Parallelograms are rectangles.
C. Rectangles are squares.
D. Squares are rectangles.

14.

Which statement about a parallelogram is *not* always true?

A. Diagonals are perpendicular.
B. Opposite sides are congruent.
C. Opposite angles are congruent.
D. Consecutive angles are supplementary.

15.

A quadrilateral whose diagonals bisect each other and are perpendicular is a:

A. rhombus C. trapezoid
B. rectangle D. parallelogram

16.

For any point (x, y), which transformation is equivalent to $R_{45^\circ} \circ R_{-135^\circ}$?

A. R_{-90°
B. R_{90°
C. $r_{y=x}$
D. $r_{x\text{-axis}}$

17. ☐

What is the image that results from this composition of transformations: $r_{x\text{-axis}} \circ R_{90°}$ (-3, 0)

A. (0, 3) C. (3, 0)
B. (0, -3) D. (3, -3)

18.

Triangle *RST* has coordinates *R*(2, -3), *S*(1, 1), and *T* (-2, -1).

(a) The coordinates of $\Delta R'S'T'$, the image of ΔRST after $(D_{2/3} \circ D_3)$ are *R*'(☐, ☐), *S*'(☐, ☐), and *T*'(☐, ☐).

(b) The coordinates of $\Delta R''S''T''$, the image of ΔRST after $T_{8,\,-4}$ are *R*''(☐, ☐), *S*''(☐, ☐), and *T*''(☐, ☐).

(c) The coordinates of $\Delta R'''S'''T'''$, the image of ΔRST after $(r_{y\text{-axis}} \circ r_{x=4})$ are *R*'''(☐, ☐), *S*'''(☐, ☐), and *T*'''(☐, ☐).

19. ☐

What are the coordinates of point *A*', the image of point *A*(-4,1) after the composite transformation $R_{90°} \circ r_{y=x}$ where the origin is the center of rotation?

A. (-1,-4) C. (1,4)
B. (-4,-1) D. (4,1)

20.

The coordinates of the vertices of parallelogram *ABCD* are *A*(−2,2), *B*(3,5), *C*(4,2), and *D*(−1,−1). State the coordinates of the vertices of parallelogram *A*″*B*″*C*″*D*″ that result from the transformation $r_{y\text{-axis}} \circ T_{2,-3}$.

Answer:

A" (☐, ☐)
B" (☐, ☐)
C" (☐, ☐)
D" (☐, ☐)

21. ☐

Which is an equation of a line parallel to the line whose equation is $3y = 2x + 3$?

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

C. $y = \frac{3}{2}x - 3$

D. $2y = 3x + 3$

22. ☐

Which equation represents the line that passes through the point (0, 1) and is parallel to the line whose equation is $3x + y = 5$?

A. $3x + y = 3$
B. $3x + y = 1$
C. $3x + y = 0$
D. $3x + y = -1$

23. ☐

Which equation represents a line perpendicular to the line whose equation is $2x + 3y = 12$?

A. $6y = -4x + 12$
B. $2y = 3x + 6$
C. $2y = -3x + 6$
D. $3y = -2x + 12$

24.

The area of pentagon *ABCDE* with vertices *A*(-5, 6), *B*(1, -7), *C*(6, 0), *D*(1, 3), and *E*(1, 6) is ☐ square units.

25. ☐

The vertices of trapezoid *ABCD* are *A*(-3, 0), *B*(-3, 4), *C*(2, 4), and *D*(4, 0). What is the area of trapezoid *ABCD*?

A. 6 C. 28
B. 24 D. 48

26. ☐

Find the area of the parallelogram whose vertices are (2, 1), (7, 1), (9, 5), and (4, 5).

A. 10 C. 25
B. 20 D. 30

27. ☐

The coordinates of the vertices of rhombus *ABCD* are *A*(1, 1), *B*(5, 3), *C*(7, 7), and *D*(3, 5). Find the coordinates of the point of intersection of the diagonals.

A. (3, 4) C. (4, 2)
B. (4, 4) D. (5, 6)

28. [ ]

The vertices of parallelogram *ABCD* are *A*(2, 4), *B*(0, 0), *C*(6, 2), and *D*(8, 6). Find the coordinates of the intersection of the diagonals.

A. (1, 2) C. (4, 3)
B. (3, 1) D. (7, 4)

29. [ ]

The coordinates of the midpoint of $\overline{AB}$ are (-2, 4). If the coordinates of point *A* are (7, 10), find the coordinates of point *B*.

A. (2.5, 7) C. (-2, -11)
B. (7, 2.5) D. (-11, -2)

30.

In a circle whose center is (2,3), one endpoint of a diameter is (-1,5). Find the coordinates of the other endpoint of that diameter.

Answer: ([ ] , [ ])

31.

The coordinates of quadrilateral *ABCD* are *A*(-1, -5), *B*(8, 2), *C*(11, 13), and *D*(2, 6).

The midpoint of $\overline{AC}$ is ([ ] , [ ]).

The midpoint of $\overline{BD}$ is ([ ] , [ ]).

The slope of $\overline{AC}$ is [ ] .

The slope of $\overline{BD}$ is [ ] .

Is quadrilateral *ABCD* is a rhombus? [Y, N] [ ]

32. [ ]

Using a coordinate geometry proof, which method below is a correct way to prove a quadrilateral is a rhombus?

A. Opposite sides have congruent slopes.
B. The diagonals have the same midpoint, and one pair of opposite sides have equal lengths.
C. The diagonals have the same length.
D. The diagonals have the same midpoint and two adjacent sides have the same length.

33.

Given ΔRST with vertices $R(1, 2)$, $S(7, 0)$ and $T(3, -2)$.

A. Prove that the triangle is a right triangle by finding the slopes, *to the nearest hundredth*, of the three sides.

The slope of $\overline{TR}$ =

The slope of $\overline{RS}$ =

The slope of $\overline{ST}$ =

Which of the following pairs of line segments are perpendicular?

1. $\overline{TR}$ and $\overline{RS}$
2. $\overline{RS}$ and $\overline{ST}$
3. $\overline{TR}$ and $\overline{ST}$

Answer:

B. Prove that the length of $\overline{TM}$, the median to $\overline{RS}$, is equal to $\overline{SM}$ by finding the distance of the segments to the nearest hundredth.

Length of $\overline{SM}$ =

Length of $\overline{TM}$ =

34.

Given the points $A(2, 3)$, $B(6,11)$ and $C(8, 5)$ are the vertices of ΔABC.

A. Prove that ΔABC is isosceles. (Round to the nearest tenth.)

Distance of $\overline{AB}$ =

Distance of $\overline{BC}$ =

Distance of $\overline{AC}$ =

B. Point D is the midpoint of the base. Prove that $\overline{CD} \perp \overline{AB}$

Slope of $\overline{AB}$ =

Slope of $\overline{CD}$ =

35.

Given quadrilateral *ABCD* with coordinates *A*(3, 4), *B*(0, 0), *C*(4, -3) and *D*(7, 1). By means of coordinate geometry, determine whether or not *ABCD* is a rhombus by first proving:

(a) it is a parallelogram by finding the midpoints of the two diagonals then

(b) finding the lengths of two adjacent sides *AB* and *BC*. *(Round to the nearest tenth.)*

Midpoint of *AC* = (,)

Midpoint of *BD* = (,)

Distance of *AB* =

Distance of *BC* =

Rhombus (Y/N):

36.

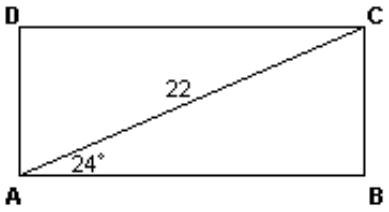


Figure 7

In the diagram of rectangle *ABCD*, *AC* = 22 and m∠*CAB* = 24.

(a) To the *nearest integer*, *AB* = units.

(b) To the *nearest integer*, *BC* = units.

(c) Using the results from parts (a) and (b), the area of *ABCD* is square units.

37.

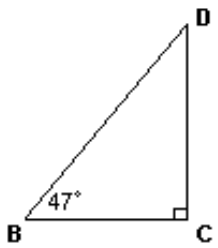


Figure 8

In right triangle *BCD*, *BD* = 12, m∠*C* = 90, and m∠*DBC* = 47. Find *DC* to the *nearest tenth*.

A. 8.2 C. 12.9

B. 8.8 D. 16.4

38.

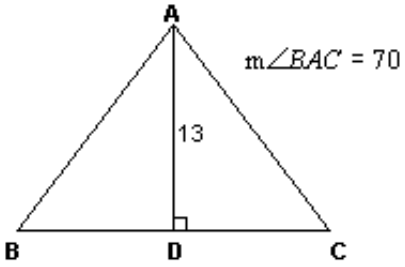


Figure 9

In the diagram of ΔABD, altitude $AD = 13$, $\overline{AB} \cong \overline{AC}$, and $m\angle BAC = 70$.

(a) To the *nearest tenth*, $BC =$ [ ] units.

(b) To the *nearest tenth*, the area of $\Delta ABC =$ [ ] square units.

(c) To the *nearest tenth*, the perimeter of $\Delta ABC =$ [ ] units.

39. [ ]

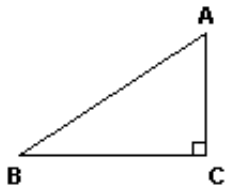


Figure 10

In the diagram of right triangle ABC, $\overline{AB}$ is the hypotenuse, $AC = 3$, $BC = 4$, and $AB = 5$. Sin B is equal to

A. sin A C. tan A
B. cos A D. cos B

40. [ ]

The straight string of a kite makes an angle of elevation from the ground of 60°. The length of the string is 400 feet. What is the best approximation of the height of the kite?

A. 200 ft. C. 300 ft.
B. 250 ft. D. 350 ft.

41.

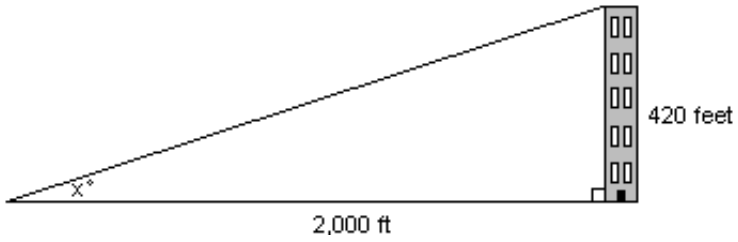


Figure 11

A person standing on level ground is 2,000 feet away from the foot of a 420-foot tall building, as shown in the accompanying diagram. To the *nearest degree*, what is the value of x?

A. 12° C. 76°
B. 21° D. 78°

42.

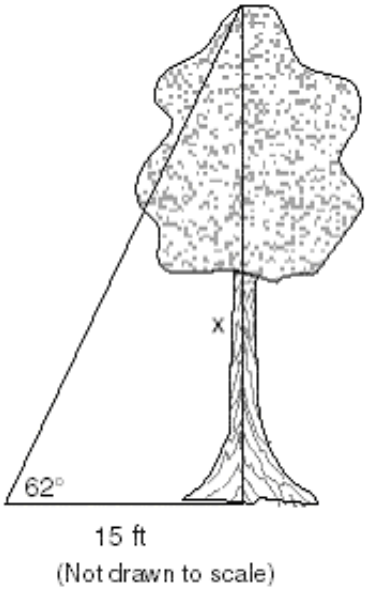


Figure 12

The accompanying diagram represents a tree. To the *nearest tenth* of a foot, the height of the tree is _____ feet.

43.

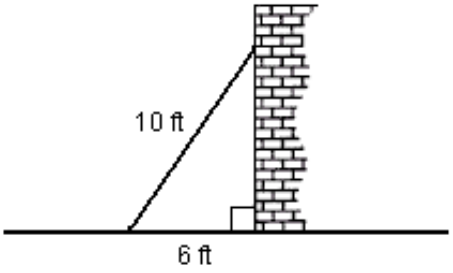
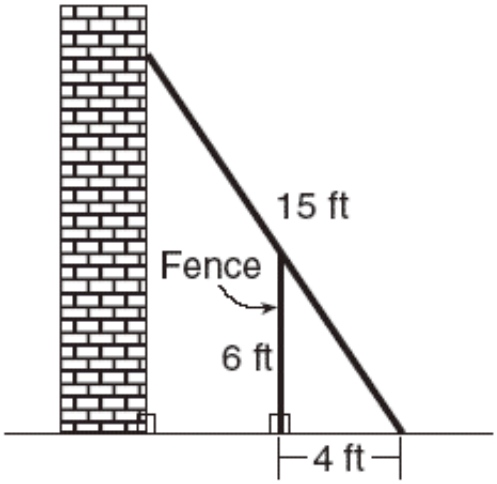


Figure 13

A wall is supported by a brace 10 feet long, as shown in the diagram. If one end of the brace is placed 6 feet from the base of the wall, the brace reaches [ ] feet up the wall.

44.

In the accompanying diagram, the base of a 15-foot ladder rests on the ground 4 feet from a 6-foot fence.



a If the ladder touches the top of the fence and the side of a building, what angle, to the *nearest degree*, does the ladder make with the ground?

Answer: [ ] °

b Using the angle found in part *a*, determine how far the top of the ladder reaches up the side of the building, to the *nearest foot*.

Answer: [ ] feet