

Section 7-5: Quadrilaterals

Special Quadrilaterals

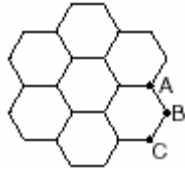
1. 080517a, P.I. G.G.39
In a certain quadrilateral, two opposite sides are parallel, and the other two opposite sides are *not* congruent. This quadrilateral could be a
[A] trapezoid [B] rhombus
[C] parallelogram [D] square
2. 010404a, 5.G.4
Which statement about quadrilaterals is true?
[A] All quadrilaterals have equal sides.
[B] All quadrilaterals are parallelograms.
[C] All quadrilaterals have four sides.
[D] All quadrilaterals have four right angles.
3. 010721a, P.I. G.G.39
A set of five quadrilaterals consists of a square, a rhombus, a rectangle, an isosceles trapezoid, and a parallelogram. Lu selects one of these figures at random. What is the probability that both pairs of the figure's opposite sides are parallel?
[A] 1 [B] $\frac{3}{4}$ [C] $\frac{4}{5}$ [D] $\frac{2}{5}$

Polygons and Angles

4. 080428a, P.I. G.G.36
What is the sum, in degrees, of the measures of the interior angles of a stop sign, which is in the shape of an octagon?
[A] 1,080 [B] 1,440
[C] 360 [D] 1,880
5. 080109a, P.I. G.G.36
The sum of the measures of the interior angles of an octagon is
[A] 360° [B] 180°
[C] $1,080^\circ$ [D] 540°
6. 010514a, P.I. G.G.36
What is the sum, in degrees, of the measures of the interior angles of a pentagon?
[A] 540 [B] 900 [C] 360 [D] 180

7. 060516a, P.I. G.G.37

The accompanying figure represents a section of bathroom floor tiles shaped like regular hexagons.



What is the measure of angle ABC ?

- [A] 60° [B] 90°
[C] 150° [D] 120°

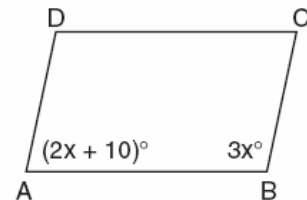
10. 080618a, P.I. G.G.38

The measures of two consecutive angles of a parallelogram are in the ratio 5:4. What is the measure of an obtuse angle of the parallelogram?

- [A] 160° [B] 80° [C] 20° [D] 100°

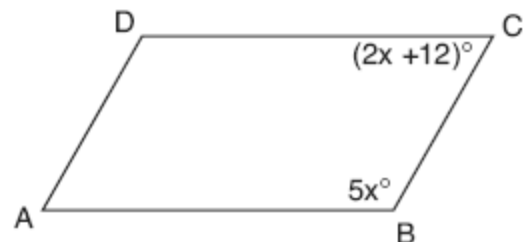
11. 060126a, P.I. G.G.38

In the accompanying diagram of parallelogram $ABCD$, $m\angle A = (2x + 10)$ and $m\angle B = 3x$. Find the number of degrees in $m\angle B$.



12. 060736a, P.I. G.G.38

In the accompanying diagram of parallelogram $ABCD$, $m\angle B = 5x$ and $m\angle C = 2x + 12$. Find the number of degrees in $\angle D$.



The Family of Parallelograms

8. 060106a, P.I. G.G.38

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

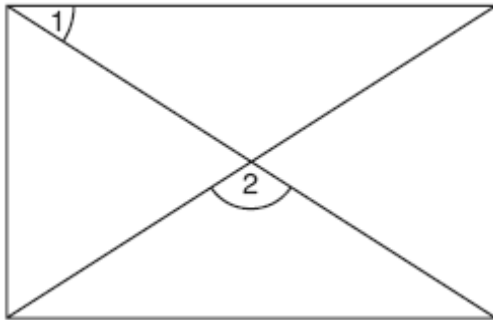
- [A] The opposite angles are congruent.
[B] The opposite sides are parallel.
[C] The opposite sides are congruent.
[D] The diagonals are congruent.

9. 010025a, P.I. G.G.39

Al says, "If $ABCD$ is a parallelogram, then $ABCD$ is a rectangle." Sketch a quadrilateral $ABCD$ that shows that Al's statement is not always true. Your sketch must show the length of each side and the measure of each angle for the quadrilateral you draw.

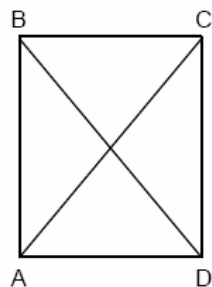
13. 010835a, P.I. G.G.38

As shown in the accompanying diagram, a rectangular gate has two diagonal supports. If $m\angle 1 = 42$, what is $m\angle 2$?



14. 089909a, P.I. G.G.39

In the accompanying diagram of rectangle ABCD, $m\angle BAC = 3x + 4$ and $m\angle ACD = x + 28$.



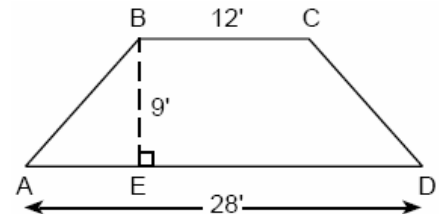
What is $m\angle CAD$?

- [A] 12 [B] 50 [C] 37 [D] 40

Trapezoids

15. 069933a, P.I. G.G.40

The cross section of an attic is in the shape of an isosceles trapezoid, as shown in the accompanying figure. If the height of the attic is 9 feet, $BC = 12$ feet, and $AD = 28$ feet, find the length of \overline{AB} to the nearest foot.



16. 010608a, P.I. A.G.1

The equation $A = \frac{1}{2}(12)(3 + 7)$ is used to find the area of a trapezoid. Which calculation would *not* result in the correct area?

- [A] $0.5(12)(10)$ [B] $\frac{12}{2} \times \frac{10}{2}$
[C] $\frac{12(3+7)}{2}$ [D] $6(3+7)$

[1] A

[2] C

[3] C

[4] A

[5] C

[6] A

[7] D

[8] D

[2] The student draws a parallelogram, which is not a rectangle, with four sides and four angles labeled, such as angles of 60, 120, 60, and 120 and sides of 4, 6, 4, and 6.

[1] A parallelogram or rhombus, not a square, is drawn, which does not have measures for all lengths or angles.

[0] Angles and/or lengths are not appropriate for a parallelogram.

or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an

[9] obviously incorrect procedure.

[10] D

[3] 102, and appropriate work is shown, such as using the equation $2x + 10 + 3x = 180$ or an equivalent equation.

[2] The equation $2x + 10 + 3x = 180$ is solved correctly for x , but $m\angle B$ is not determined or is determined incorrectly.

[1] Appropriate work is shown, but one computational error is made or x is not determined.

or [1] The equation $2x + 10 + 3x = 360$ is solved correctly, and an answer of 210 is found.

or [1] 102, but no work is shown.

[0] The equation $2x + 10 = 3x$ where $x = 10$ is given.

or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an

[11] obviously incorrect procedure.

[3] 120, and appropriate work is shown, such as solving the equation $5x + 2x + 12 = 180$.

[2] Appropriate work is shown, but one computational error is made.

or [2] The correct equation is solved for x , but no further correct work is shown.

[1] Appropriate work is shown, but two or more computational errors are made.

or [1] Appropriate work is shown, but one conceptual error is made.

or [1] A correct equation is written, but no further correct work is shown.

or [1] An incorrect equation of equal difficulty is solved appropriately, and an appropriate measure is found for $\angle D$.

or [1] 120, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[12] incorrect procedure.

[2] 96, and appropriate work is shown, such as an algebraic solution or a correctly labeled diagram.

[1] Appropriate work is shown, but one computational error is made.

or [1] Appropriate work is shown, but one conceptual error is made.

or [1] 96, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[13] incorrect procedure.

[14] B

[4] 12 and an appropriate method is shown, such as $(AB)^2 = 9^2 + 8^2$.

[3] An incorrect length is found for AE, but then it is used to correctly complete the problem.

or [3] An appropriate method is shown, but one computational mistake is made.

or [3] An appropriate method is shown, but the answer is not given to the nearest foot, such as $\sqrt{145}$.

[2] AE = 8 and one computational mistake is made using the Pythagorean theorem.

or [2] An incorrect length is found for AE, but then it is used to complete the problem correctly, but the answer is not rounded.

[1] AE = 8 is found, but the Pythagorean theorem is not used.

or [1] 12 and no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[15] incorrect procedure.

[16] B
