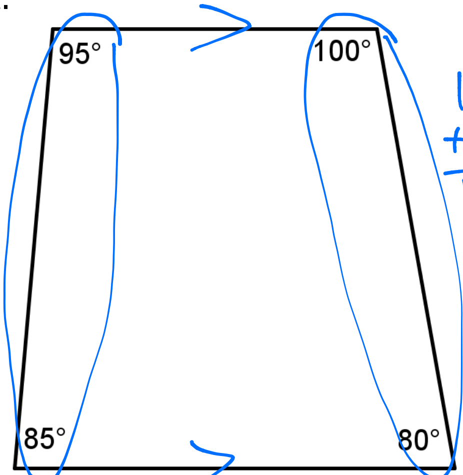
Geometry Chapter 8 Test Review Name Key

Determine the most specific name of the quadrilateral. Your choices are quadrilateral, parallelogram, rhombus, rectangle, square, trapezoid, isosceles trapezoid, and kite.

1.



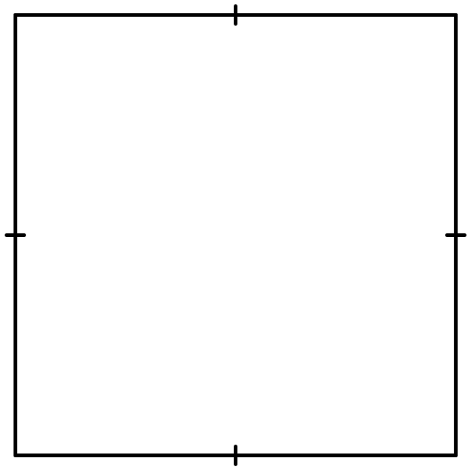
95 + 85 = 180

100 + 80 = 180

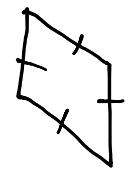
lines are parallel

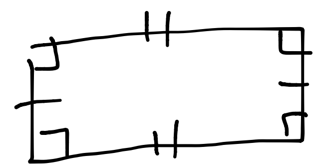
⇒ trapezoid

2.



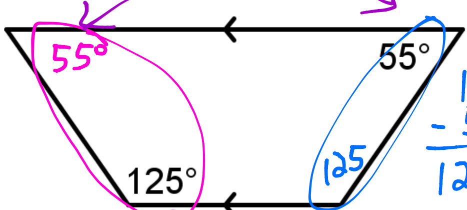
rhombus (4 ≅ sides)





3.

base ∠'s ≅ → isosceles trapezoid

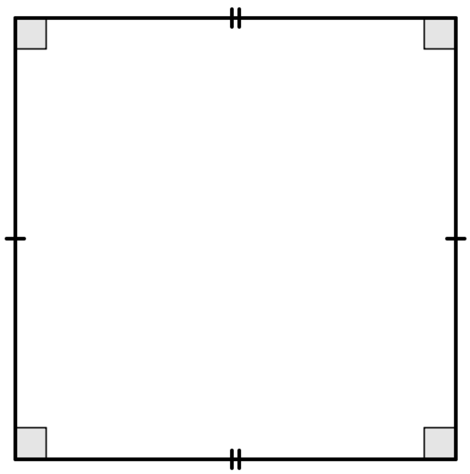


180 − 125 = 55

180 − 55 = 125

base ∠'s ≅

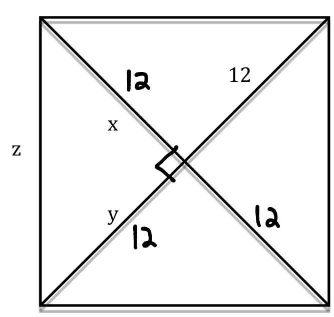
4.



rectangle (4 ≅ ∠'s)

Find the value of each variable in the square.

5.



X = 12

Y = 12

Z = $12\sqrt{2} = \sqrt{288} \approx 16.97$

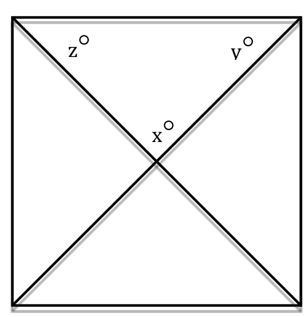
$z^2 = 12^2 + 12^2$

$z^2 = 144 + 144$

$z^2 = 288$

$z = \sqrt{288} = \sqrt{144}\sqrt{2} = 12\sqrt{2}$

6.



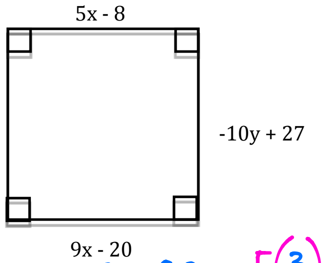
X = 90

Y = 45

Z = 45

Use the properties of the given quadrilateral to find the value of each the variable.

7. Below is a square.



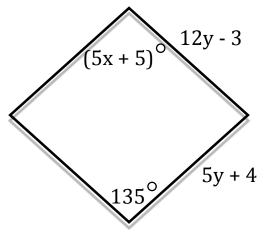
$5x-8=9x-20$
$-5x \quad -5x$
$+20 \quad +20$
$12=4x$
$\frac{12}{4}=\frac{4x}{4}$
$3=x$

$5(3)-8=-10y+27$
$7=-10y+27$
$-27 \quad -27$
$-20=-10y$
$\frac{-20}{-10}=\frac{-10y}{-10}$
$2=y$

X = 3

Y = 2

8. Below is a rhombus.



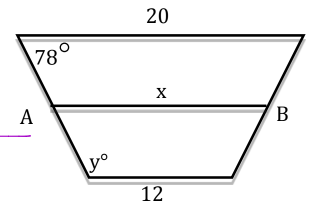
$5x+5=135$
$-5 \quad -5$
$5x=130$
$\frac{5x}{5}=\frac{130}{5}$
$x=26$

$12y-3=5y+4$
$-5y \quad -5y$
$+3 \quad +3$
$7y=7$
$\frac{7y}{7}=\frac{7}{7}$
$y=1$

X = 26

Y = 1

9. Below is a trapezoid.
$\overline{AB}$ is the midsegment.



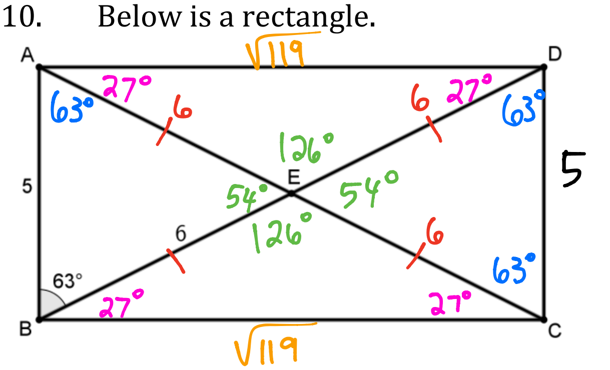
180
-78
$102=y$

$x=\frac{20+12}{2}$
$x=\frac{32}{2}$
$x=16$

X = 16

Y = 102

10. Below is a rectangle.



90
-63
27

63
$+63$
126

180
-126
54

isosceles △BAE

$m\angle CBE =$ 27°

$m\angle BAE =$ 63°

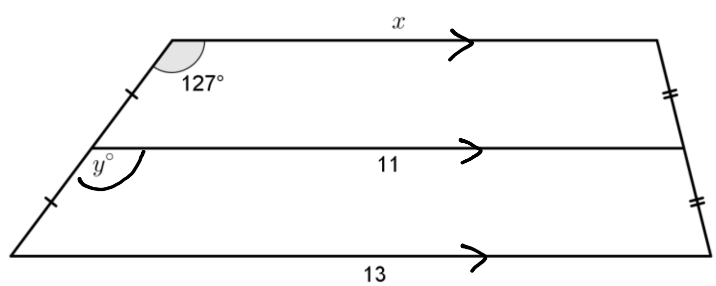
$m\angle DAE =$ 27°

$m\angle BEA =$ 54° triangle angles = 180°

$AC =$ 12

$CD =$ 5

11. Below is a trapezoid



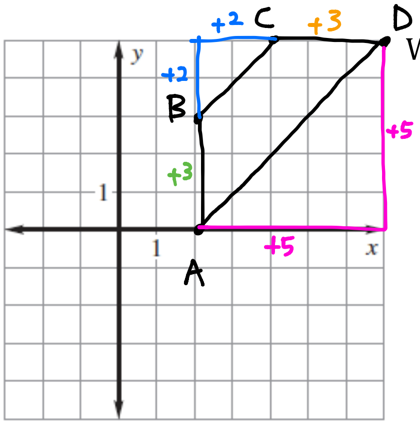
$\frac{11}{1}=\frac{x+13}{2}$
$22=x+13$
$-13 \quad -13$
$9=x$

X = 9

Y = 127°

Use the given vertices to graph ABCD. Give the most specific classification for ABCD. Justify your answer by first calculating all necessary slopes, distances, and/or midpoints then explaining how those allow you to make your classification.

12. $A(2,0), B(2,3), C(4,5), D(7,5)$ Name Isosceles Trapezoid



Work and Explanation:

slope $\overline{BC} = \frac{2}{2} = 1$

slope $\overline{AD} = \frac{5}{5} = 1$ } $\overline{BC} \parallel \overline{AD}$

slope $\overline{AB} = \frac{3}{0}$ = undefined

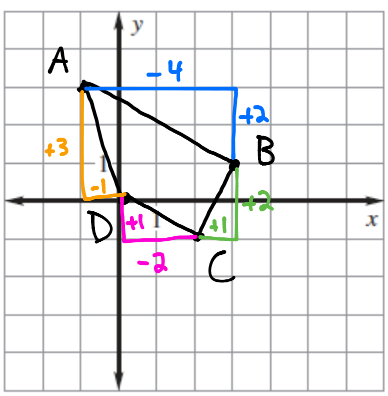
slope $\overline{CD} = \frac{0}{3} = 0$ } $\overline{AB} \nparallel \overline{CD}$

distance $AB = 3$ $(AB^2 = 0^2 + 3^2)$ distance $CD = 3$ $(CD^2 = 3^2 + 0^2)$

$\overline{AB} \cong \overline{CD}$

Since the bases are parallel and the legs are congruent, it is an isosceles trapezoid.

13. $A(-1,3), B(3,1), C(2,-1), D(0,0)$ Name trapezoid



Work and Explanation:

Slope $\overline{AB} = \frac{2}{-4} = -\frac{1}{2}$

slope $\overline{CD} = \frac{1}{-2}$ } $\overline{AB} \parallel \overline{CD}$

slope $\overline{BC} = \frac{2}{1} = 2$

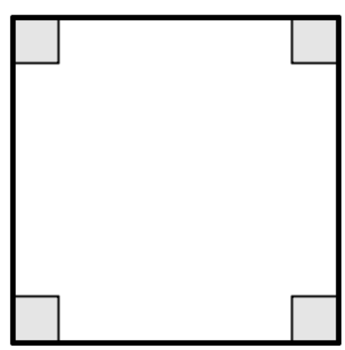
slope $\overline{AD} = \frac{3}{-1} = -3$ } $\overline{BC} \nparallel \overline{AD}$

Since there is one pair of parallel sides it is a trapezoid

Error Analysis:

14. Original Instructions: Classify the figure at the right giving the most specific name possible.

Sam's incorrect answer is show below. Explain why Sam's answer is incorrect, correctly identify the most specific name of the object, and explain the reasoning for your answer.



The object is a quadrilateral with 4 right angles, so it is a square.

Explain the error.

To be a square it must also have 4 ≅ sides, which it does not

Identify the correct name of the quadrilateral.

Rectangle

Explain your reasoning.

It has 4 ≅ ∠'s (and not 4 ≅ sides)

Given coordinates A, B, and C, choose the coordinates of point D so that ABCD forms a parallelogram. Explain why your chosen point for D will make a parallelogram. *You may want graph paper* (If used attach it to this sheet when you turn it in)

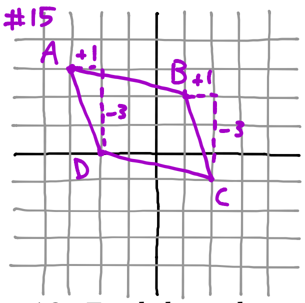
15. A(-3, 3), B(1, 2) C(2, -1) D(-2 , 0)Explain: makes $\overline{AD}$ have the same length and slope as $\overline{BC}$

16. A(5, 3), B(1, 2) C(2, -1) D(6 , 0)Explain: makes $\overline{AD}$ have the same length and slope as $\overline{BC}$

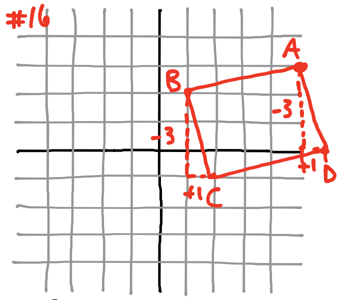
17. A(-3, 3), B(1, 2) C(4, 0) D(0 , 1)Explain: makes $\overline{AD}$ have the same length and slope as $\overline{BC}$

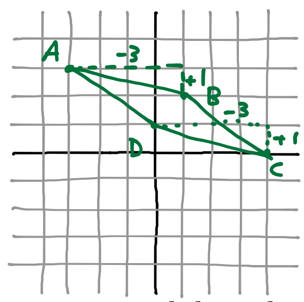
18. A(3, 3), B(-3, 2) C(2, -1)D(8 , 0)Explain: makes $\overline{AD}$ have the same length and slope as $\overline{BC}$

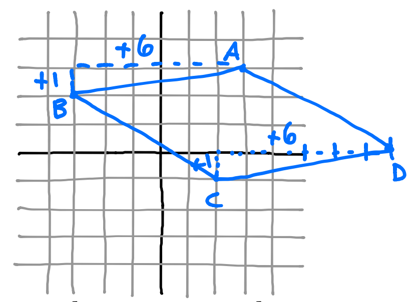
#15



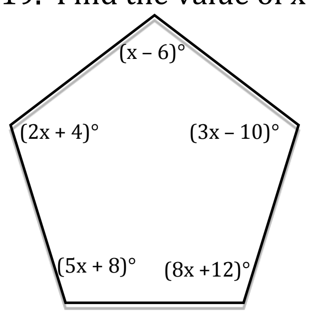
#16







19. Find the value of x in the given pentagon



Sum of int angles of a pentagon:

$(5-2)\,180°$

$(3)\,180°$

$540°$

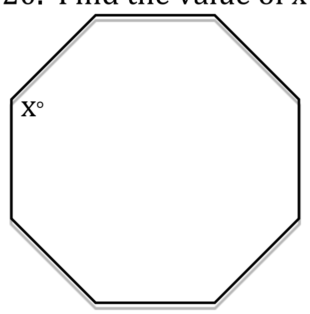
$x-6+2x+4+5x+8+8x+12+3x-10=540°$

$19x+8=540$

$19x=532$

$x\approx 28$

20. Find the value of x in the given regular octagon.



$x=\frac{(8-2)180°}{8}=\frac{(6)180°}{8}=\frac{1080}{8}$

$x=135°$

21. The measures of the exterior angles of a convex heptagon are ~~70°~~, ~~8x°~~, ~~5x°~~, ~~55°~~, ~~2x°~~, ~~6x°~~, and ~~46°~~. What is the measure of the **exterior angles in order from smallest to largest**?

$70+8x+5x+55+2x+6x+46=360$

$21x+171=360$

$21x=189$

$x=9$

$2x \Rightarrow 18°$

$5x \Rightarrow 45°$

$6x \Rightarrow 54°$

$8x \Rightarrow 72°$

18°, 45°, 46°, 54°, 55°, 70°, 72°

Given the sum of the interior angles of a convex polygon, classify the polygon by the number of sides.

22. 2160°

$2160=(n-2)180$

$12=n-2$

$14=n$

it is a 14-gon

23. 2700°

$2700=(n-2)180$

$15=n-2$

$17=n$

it is a 17-gon

24. 1080°

$1080=(n-2)180$

$6=n-2$

$8=n$

it is an octagon

Given the measure of an interior angle of a regular polygon, find the number of sides.

25. 150°

$\Rightarrow$ ext angle $= 180° - 150° = 30°$

$\frac{360°}{n} = 30°$ $\quad 360° = 30°n$ $\quad 12 = n$

26. 120°

$\Rightarrow$ ext. angle $= 180° - 120° = 60°$

$\frac{360°}{n} = 60°$ $\quad 360° = 60°n$ $\quad 6 = n$

27. 60°

$\Rightarrow$ ext. angle $= 180° - 60° = 120°$

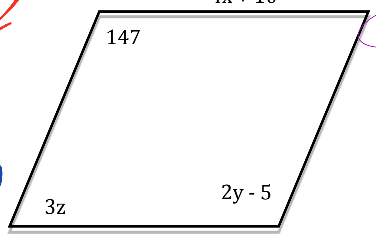
$\frac{360°}{n} = 120°$

$360° = 120°n$

$3 = n$

Find the value of each variable in the parallelogram.

28.



opp sides $\cong$

$4x + 10 = 6x$

$10 = 2x$

$5 = x$

$147 + 3z = 180$

$3z = 33$

$z = 11$ (consecutive $\angle$'s)

$147 = 2y - 5$ (opp $\angle$'s $\cong$)

$152 = 2y$

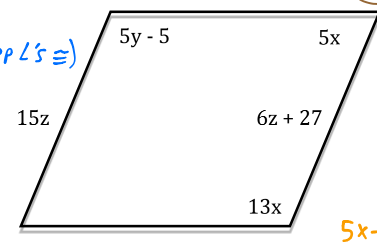
$76 = y$

X = 5

Y = 76

Z = 11

29.



$5y - 5 = 13(10)$ (opp $\angle$'s $\cong$)

$5y = 135$

$y = 27$

$15z = 6z + 27$ (opp sides $\cong$)

$9z = 27$

$z = 3$

$5x + 13x = 180$ (consecutive $\angle$'s)

$18x = 180$

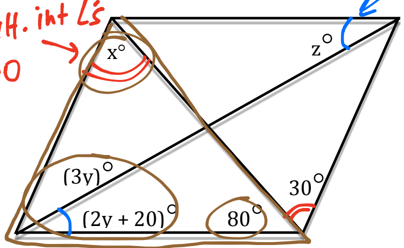
$x = 10$

X = 10

Y = 27

Z = 3

30.



alt. int $\angle$'s

$x = 30$

alt. int $\angle$'s

angles in the Δ add up to 180°

$30° + 3y + 2y + 20° + 80° = 180°$

$5y + 130 = 180$

$5y = 50$

$y = 10$

$z = 2(10) + 20$

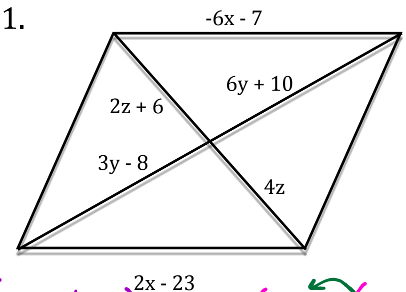
$z = 40$

X = 30

Y = 10

Z = 40

31.



$-6x - 7 = 2x - 23$ (opp sides $\cong$)

$16 = 8x$

$2 = x$

$3y - 8 = 6y + 10$ (diagonals bisect)

$-18 = 3y$

$-6 = y$

$2z + 6 = 4z$

$6 = 2z$

$3 = z$

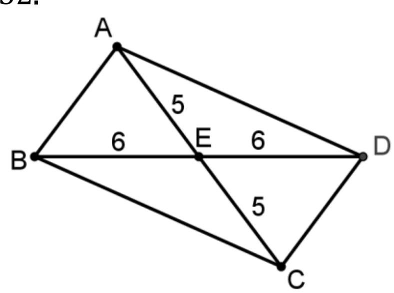
X = 2

Y = -6

Z = 3

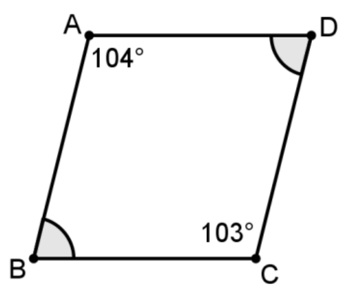
Is it possible to prove each quadrilateral is a parallelogram? Explain your answer.

32.



yes, the diagonals bisect each other

33.



no, the 104° and 103° opp. angles are not $\cong$