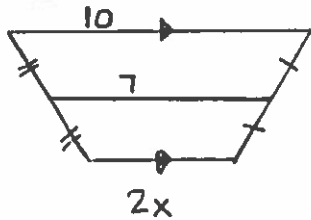


Q8B, Advanced Geometry 8.4-8.6

1. Find the value of x.



$$7 = \frac{1}{2}(10 + 2x)$$

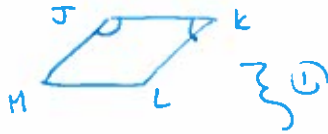
$$14 = 10 + 2x$$

$$4 = 2x$$

$$2 = x$$

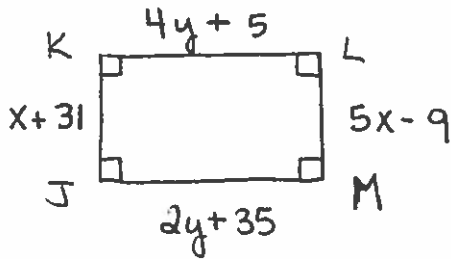
2. For any rhombus JKLM, decide whether the statement is always or sometimes true. Draw a diagram and explain your reasoning.

$$\angle L \cong \angle M$$



① Sometimes - it would have to be a square

3. Classify the special quadrilateral. Explain your reasoning. Then find the values of x and y.



① Rectangle - 4 right angles

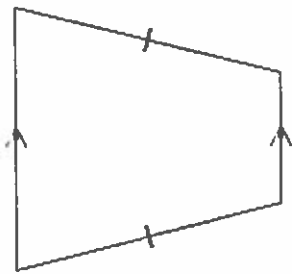
$$x + 31 = 5x - 9$$

$$x = 10$$

$$4y + 5 = 2y + 35$$

$$y = 15$$

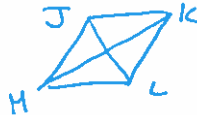
4. Describe the figure using as many of these words as possible: rectangle, trapezoid, square, quadrilateral, parallelogram, rhombus.



tapezoid  
quadrilateral

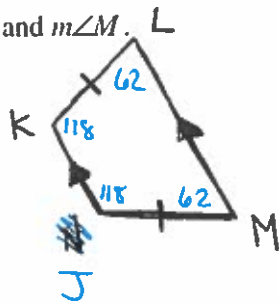
5. For any rhombus JKLM, decide whether the statement is always or sometimes true. Draw a diagram and explain your reasoning.

$\overline{JL} \cong \overline{KM}$



① Sometimes - square has congruent diagonals

6. Find  $m\angle J$ ,  $m\angle L$ , and  $m\angle M$ .



$\angle K = 118^\circ$

$m\angle J = 118$

$m\angle L = 62$

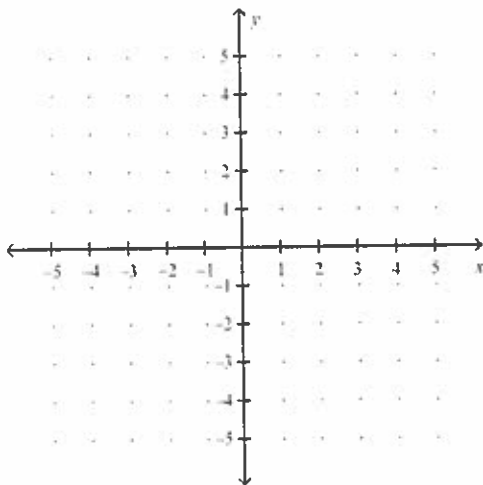
$m\angle M = 62$

7. If all four sides of a quadrilateral are congruent, the quadrilateral is \_\_\_\_\_.

- a. a rhombus
- b. a nonsquare rectangle
- c. a kite
- d. a trapezoid

8. The diagonals of a parallelogram always \_\_\_\_\_.
- a. are parallel
  - b. bisect each other
  - c. are congruent
  - d. are perpendicular

9. Use slope or the Distance Formula to determine the most precise name for the figure:  $A(-1, -4)$ ,  $B(1, -1)$ ,  $C(4, 1)$ ,  $D(2, -2)$ .  
(you do NOT have to graph it... if you can figure it out without graphing)



$$m_{AB} = \frac{3}{2}$$

$$m_{CD} = \frac{3}{2}$$

$$m_{BC} = \frac{2}{3}$$

$$m_{AD} = \frac{2}{3}$$

$$AB = \sqrt{13}$$

$$CD = \sqrt{13}$$

$$BC = \sqrt{13}$$

$$AD = \sqrt{13}$$

rhombus

- a. trapezoid
- b. square
- c. rhombus
- d. kite

10. Choose the statement that is NOT always true.

For an isosceles trapezoid \_\_\_\_\_.

- a. the diagonals are congruent
- b. the diagonals are perpendicular
- c. the base angles are congruent
- d. the legs are congruent

11. For any rectangle WXYZ, decide whether the statement is always or sometimes true. Draw a diagram and explain your reasoning

$$\angle W \cong \angle X$$



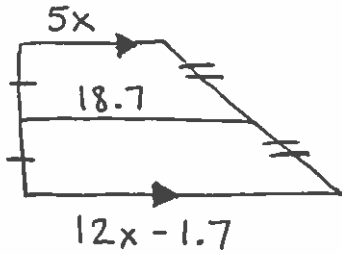
① always - rectangle corollary - all  $\angle$ 's are  $90^\circ$

12. Which statement is true?

- a. All rectangles are squares.
- b. All quadrilaterals are parallelograms.
- c. All parallelograms are quadrilaterals.
- d. All quadrilaterals are squares.

13. Find the value of  $x$ .

①



$$18.7 = \frac{1}{2}(5x + 12x - 1.7)$$

$$37.4 = 17x - 1.7$$

$$39.1 = 17x \quad \text{X} = 2.3$$

14. True or false: A square is a rectangle.

1

true

15. Name each quadrilateral - parallelogram, rectangle, rhombus, and square - for which the statement is true.

2

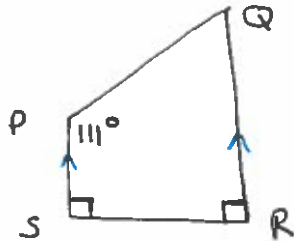
Its diagonals are perpendicular.

rhombus

square

16. Give the most specific name for the quadrilateral. Explain.

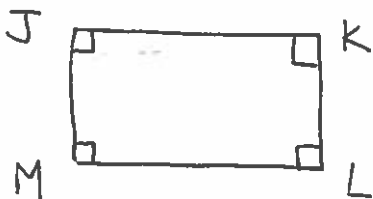
2



① trapezoid - 1 pair of parallel sides b/c  $90^\circ$   $\angle$ 's.

17. Give the most specific name for the quadrilateral. Explain.

2

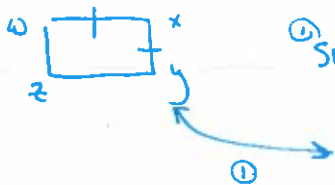


① rectangle - ~~you~~

① 4  $90^\circ$   $\angle$ 's & you don't know if opposite sides are congruent.

18. For any rectangle WXYZ, decide whether the statement is always or sometimes true. Draw a diagram and explain your reasoning.

$\overline{WX} \cong \overline{XY}$

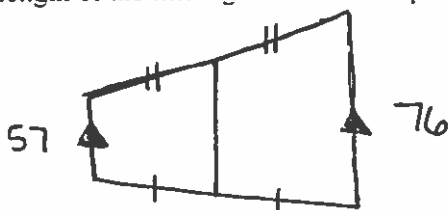


① Sometimes - adjacent sides are congruent if it's a square

19. True or false: A rectangle is an equiangular quadrilateral.

true

20. Find the length of the midsegment of the trapezoid.

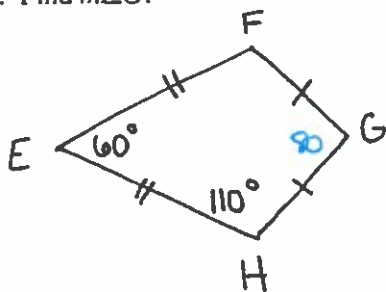


$\frac{1}{2} (57 + 76) = 66.5$

21. Which type of quadrilateral has no parallel sides?

- a. trapezoid
- b. rectangle
- c. rhombus
- d. kite

22. EFGH is a kite. Find  $m\angle G$ .

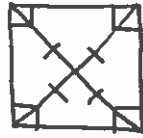


$60 + 110 + 110 + G = 360$

$m\angle G = 80^\circ$

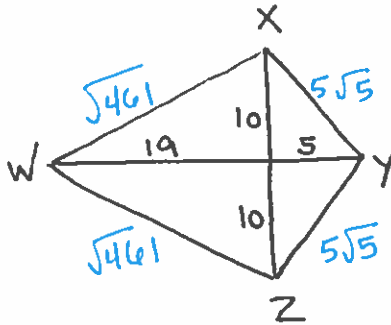
23. Tell whether enough information is given in the diagram to classify the quadrilateral by the indicated name. Explain.

Square



~~square~~  
 ① MW - ① we don't know side measurements  
 - could be a rectangle.

24. Use Theorem 8.18 and the Pythagorean Theorem to find the side lengths of the kite. Write the lengths in simplest radical form.



$$10^2 + 5^2 = 5\sqrt{5}$$

$$19^2 + 10^2 = \sqrt{461}$$

25. The diagonals of rhombus ABCD intersect at E. Given that  $m\angle BAC = 53^\circ$  and  $DE=8$ , find the indicated measure.

$m\angle DAC = 53^\circ$

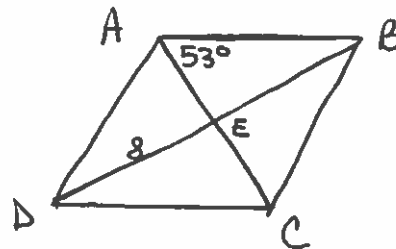
$m\angle AED = 90^\circ$

$m\angle ADC = 74^\circ$

DB = 16

AE = 4

AC = 12

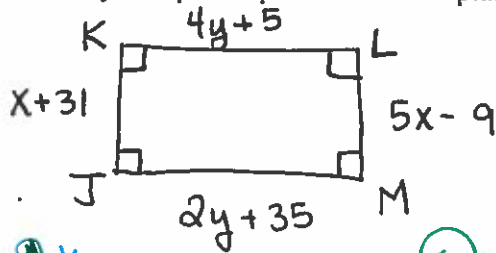


42

Q8B, Advanced Geometry 8.4-8.6

1. The diagonals of a parallelogram always \_\_\_\_\_.
- a. are perpendicular
  - b. are congruent
  - c. are parallel
  - d. bisect each other

2. Classify the special quadrilateral. Explain your reasoning. Then find the values of x and y.



~~parallelogram~~  
of Quadrilateral

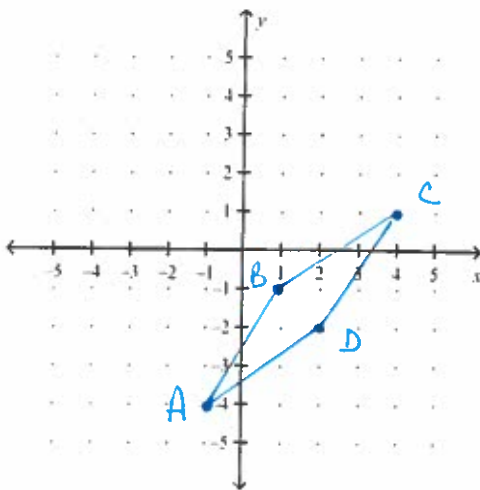
possible bonus?

$x = 10$   
 $y = 15$

assumptions when solving for x & y.

3. Choose the statement that is NOT always true. For an isosceles trapezoid \_\_\_\_\_.
- a. the diagonals are congruent
  - b. the legs are congruent
  - c. the base angles are congruent
  - d. the diagonals are perpendicular

4. Use slope or the Distance Formula to determine the most precise name for the figure: A(-1, -4), B(1, -1), C(4, 1), D(2, -2). (you do NOT have to graph it... if you can figure it out without graphing)



$m_{AB} = \frac{3}{2}$        $m_{CD} = \frac{3}{2}$

$m_{BC} = \frac{2}{3}$        $m_{AD} = \frac{2}{3}$

$AB = \sqrt{(-1-1)^2 + (-4+1)^2}$   
 $4+9 = \sqrt{13}$

$CD = \sqrt{(4-2)^2 + (1-2)^2}$   
 $4+9 = \sqrt{13}$

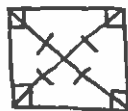
$BC = \sqrt{(1-4)^2 + (-1-1)^2}$   
 $9+4 = \sqrt{13}$

$AD = \sqrt{(-1-2)^2 + (-4-2)^2}$   
 $9+4 = \sqrt{13}$

- a. square
- b. trapezoid
- c. kite
- d. rhombus

- 2 5. Tell whether enough information is given in the diagram to classify the quadrilateral by the indicated name. Explain.

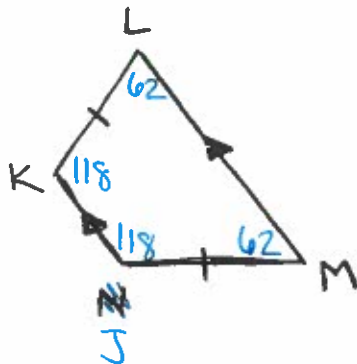
Square



no, it could be a rectangle.

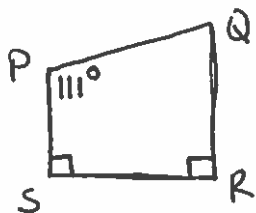
6. Find  $m\angle J$ ,  $m\angle L$ , and  $m\angle M$ .

$\angle K = 118^\circ$



$m\angle J = 118^\circ$   
 $m\angle L = 62^\circ$   
 $m\angle M = 62^\circ$

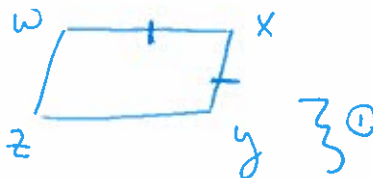
7. Give the most specific name for the quadrilateral. Explain.



trapezoid - there is one pair of parallel lines

8. For any rectangle WXYZ, decide whether the statement is always or sometimes true. Draw a diagram and explain your reasoning.

$\overline{WX} \cong \overline{XY}$



sometimes - square or rhombus

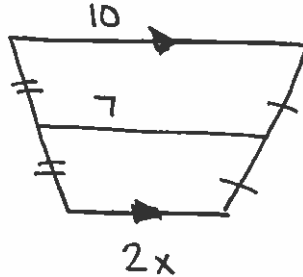
adjacent sides are congruent if the rectangle is a square



9. True or false: A rectangle is an equiangular quadrilateral.

1  
true

10. Find the value of x.



$$7 = \frac{1}{2}(10 + 2x)$$

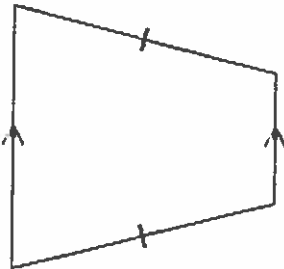
$$14 = 10 + 2x$$

$$\begin{array}{r} 14 \\ -10 \\ \hline 4 \end{array} = \begin{array}{r} 2x \\ -10 \\ \hline 2 \end{array}$$

$$\frac{4}{2} = \frac{2x}{2}$$

$x = 2$

11. Describe the figure using as many of these words as possible: ~~rectangle~~, ~~trapezoid~~, ~~square~~, quadrilateral, ~~parallelogram~~, ~~rhombus~~.



trapezoid  
quadrilateral

12. If all four sides of a quadrilateral are congruent, the quadrilateral is \_\_\_\_\_.

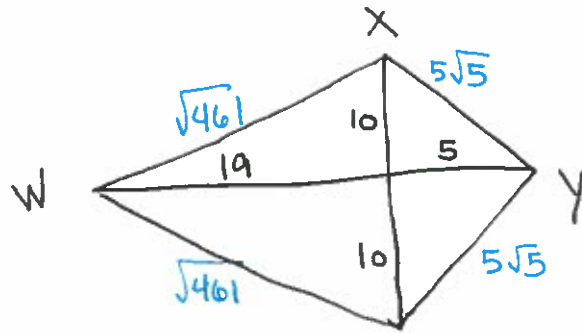
1  
a. a trapezoid

b. a nonsquare rectangle

c. a rhombus

d. a kite

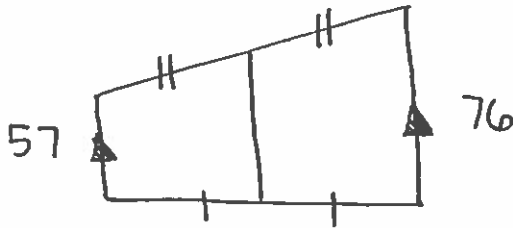
- 2 13. Use Theorem 8.18 and the Pythagorean Theorem to find the side lengths of the kite. Write the lengths in simplest radical form.



$$\begin{aligned} xy^2 &= 10^2 + 5^2 \\ &= 100 + 25 \\ &= \sqrt{125} = 5\sqrt{5} \end{aligned}$$

$$\begin{aligned} wx^2 &= 19^2 + 10^2 \\ &= \sqrt{461} \end{aligned}$$

14. Find the length of the midsegment of the trapezoid.



$$\frac{1}{2}(57 + 76) = 66.5$$

15. Which type of quadrilateral has no parallel sides?  
 a. rectangle                      c. kite  
 b. trapezoid                      d. rhombus

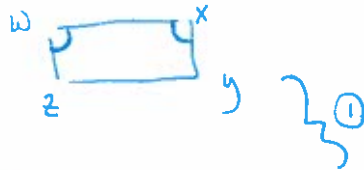
- 2 16. Name each quadrilateral - parallelogram, rectangle, rhombus, and square for which the statement is true.

Its diagonals are perpendicular.

rhombus  
square

- 2 17. For any rectangle WXYZ, decide whether the statement is always or sometimes true. Draw a diagram and explain your reasoning

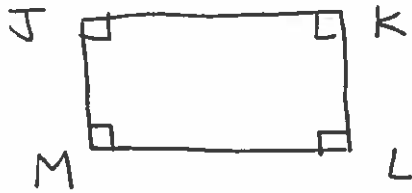
$$\angle W \cong \angle X$$



~~sometimes true~~ <sup>①</sup> always - rectangle corollary  
all  $\angle$ 's are  $90^\circ$

18. Give the most specific name for the quadrilateral. Explain.

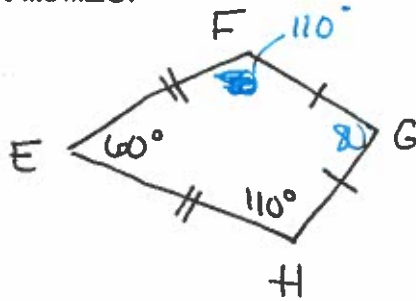
2



① there are 4 right  $\angle$ 's  
 ② rectangle - you don't know if all sides are congruent.

19. EFGH is a kite. Find  $m\angle G$ .

1



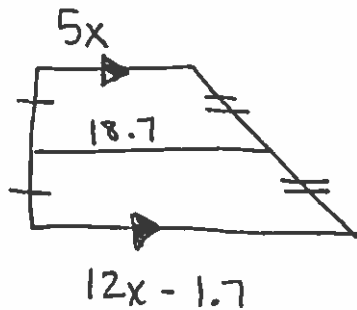
$$60 + 220 + \angle G = 360$$

$$\angle G = 80$$

20. Which statement is true?

- a. All quadrilaterals are parallelograms.
- b. All parallelograms are quadrilaterals.
- c. All quadrilaterals are squares.
- d. All rectangles are squares.

21. Find the value of x.



$$18.7 = \frac{1}{2}(5x + 12x - 1.7)$$

$$37.4 = 17x - 1.7$$

$$39.1 = 17x$$

$$x = 2.3$$

22. The diagonals of rhombus ABCD intersect at E. Given that  $m\angle BAC = 53^\circ$  and  $DE=8$ , find the indicated measure.

$m\angle DAC = 53^\circ$

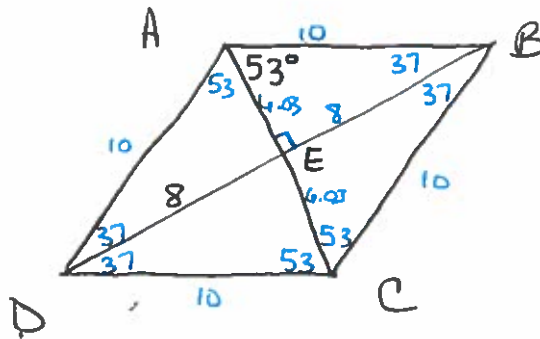
$m\angle AED = 90^\circ$

$m\angle ADC = 74^\circ$

$DB = 16$

$AE = 6.03$

$AC = 12.06$

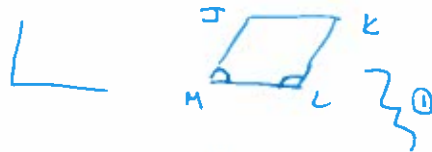


23. True or false: A square is a rectangle.

True

24. For any rhombus JKLM, decide whether the statement is always or sometimes true. Draw a diagram and explain your reasoning.

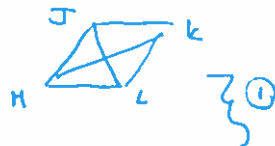
$\angle L \cong \angle M$



ⓐ Sometimes - if it's a square.

25. For any rhombus JKLM, decide whether the statement is always or sometimes true. Draw a diagram and explain your reasoning.

$\overline{JL} \cong \overline{KM}$



ⓐ Sometimes - if it's a square