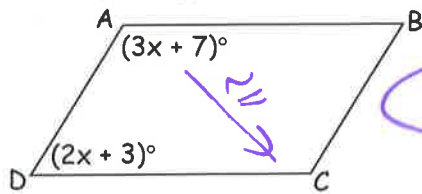


1. ABCD is a parallelogram. Find $m\angle C$.

↳ consecutive $\angle$ s supp



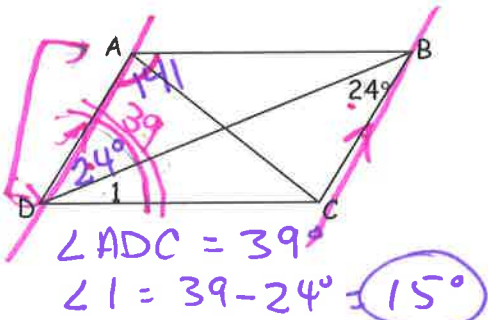
$\angle C = 109^\circ$

$$3x + 7 + 2x + 3 = 180 \quad x = 34$$

$$5x + 10 = 180 \quad \angle A = 3(34) + 7 = 109$$

$$5x = 170$$

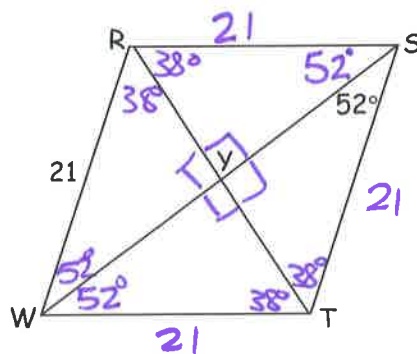
3. ABCD is a parallelogram and $m\angle BAD = 141^\circ$. Find $m\angle 1$.



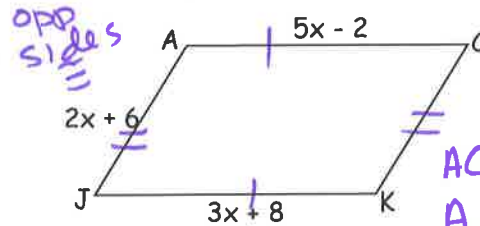
$\angle ADC = 39^\circ$
 $\angle 1 = 39 - 24 = 15^\circ$

5. RSTW is a rhombus. Find each of the following.

$m\angle RWS = 52^\circ$
 $m\angle SYT = 90^\circ$
 $m\angle RST = 104^\circ$
 $m\angle WTS = 76^\circ$
 $m\angle WRT = 38^\circ$
 $ST = 21$
 $WT = 21$

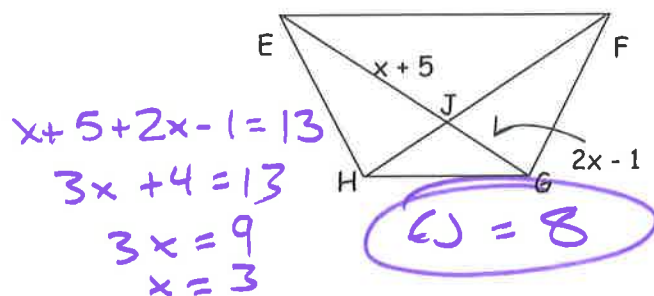


2. JACK is a parallelogram. Find the perimeter.



$5x - 2 = 3x + 8$
 $2x = 10$
 $x = 5$
 $AC = JK = 23$
 $AJ = CK = 16$
 $23 + 23 + 16 + 16 = 78$ perimeter

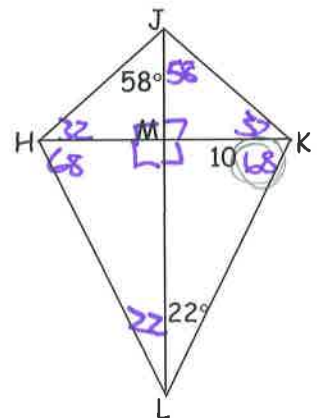
4. EFGH is an isosceles trapezoid. If $HF = 13$ Find EJ .



$x + 5 + 2x - 1 = 13$
 $3x + 4 = 13$
 $3x = 9$
 $x = 3$
 $EJ = 8$

6. HJKL is a kite. Find each of the following.

$m\angle MJK = 58^\circ$
 $m\angle JMH = 90^\circ$
 $m\angle JKM = 32^\circ$
 $m\angle HKL = 68^\circ$
 $m\angle MHL = 68^\circ$
 $m\angle HJK = 116^\circ$
 $HM = 10$



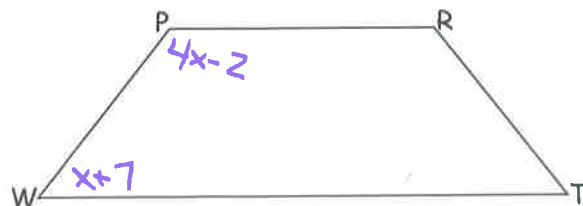
7. PRTW is an isosceles trapezoid.

$\angle WPR = 4x - 2$

$\angle PWT = x + 7$

Find $m\angle PRT = 138^\circ$

consecutive $\angle$ s supp
 $4x - 2 + x + 7 = 180$
 $5x = 175$
 $x = 35$



* base $\angle$ s $\cong$ *
 $\angle PRT \cong \angle WPR$
 $\angle WPR = 4(35) - 2 = 138^\circ$

8. ABCD is a rectangle.

AD = 7

AB = 24

$m\angle ABD = \underline{19^\circ}$

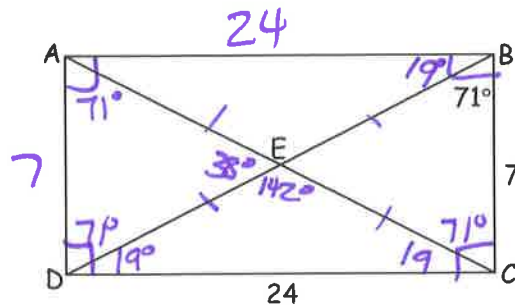
$m\angle DAB = \underline{90^\circ}$

$m\angle BDC = \underline{19^\circ}$

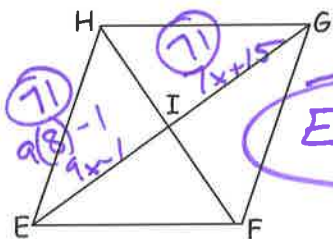
$m\angle DAC = \underline{71^\circ}$

$m\angle AED = \underline{38^\circ}$

$m\angle DEC = \underline{142^\circ}$



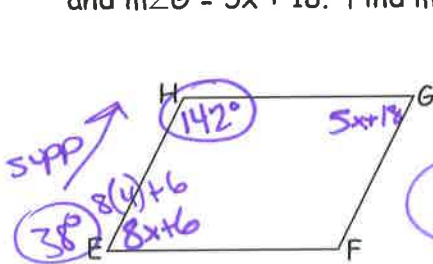
9. In parallelogram EFGH, if $EI = 9x - 1$ and $IG = 7x + 15$. Find EG.



$EG = 142$

$$\begin{aligned} 9x - 1 &= 7x + 15 \\ 2x &= 16 \\ x &= 8 \end{aligned}$$

11. In parallelogram EFGH, $m\angle E = 8x + 6$ and $m\angle G = 5x + 18$. Find $m\angle H$.

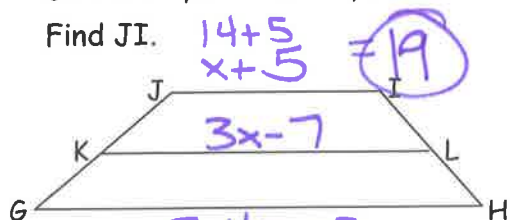


opp $\angle s \cong$

$m\angle H = 142^\circ$

$$\begin{aligned} 8x + 6 &= 5x + 18 \\ 3x &= 12 \\ x &= 4 \end{aligned}$$

13. In trapezoid GHIJ, $\overline{KL}$ is a midsegment, $JI = x + 5$, $KL = 3x - 7$, and $GH = 4x - 5$. Find JI.



$m = \frac{1}{2}(b_1 + b_2)$

$$3x - 7 = \frac{1}{2}(x + 5 + 4x - 5)$$

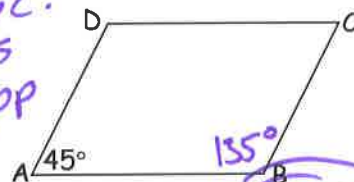
$$2[3x - 7] = \left[\frac{1}{2}(5x)\right]$$

$$6x - 14 = 5x$$

$x = 14$

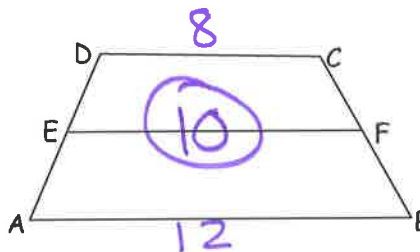
10. In parallelogram ABCD, $m\angle A = 45^\circ$. Find $m\angle B$.

consec. $\angle s$ supp



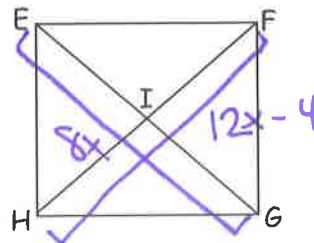
$180 - 45 = \underline{135^\circ}$

12. In trapezoid ABCD, $\overline{EF}$ is a midsegment, $DC = 8$, and $AB = 12$. Find EF.



$M = \frac{1}{2}(8 + 12)$

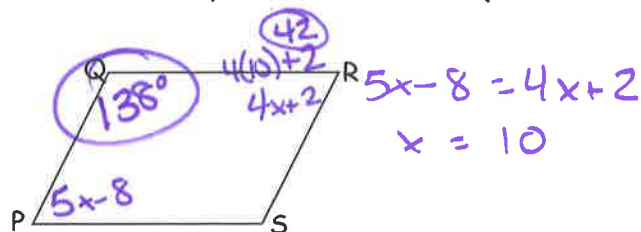
14. The given figure EFGH is a square. If $EG = 8x$ and $FH = 12x - 4$, then find EG.



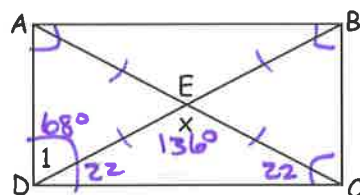
$$\begin{aligned} 8x &= 12x - 4 \\ -4x &= -4 \\ x &= 1 \end{aligned}$$

$EG = 8$

15. In parallelogram PQRS, if $m\angle P = 5x - 8$ and $m\angle R = 4x + 2$, then find the $m\angle Q$.

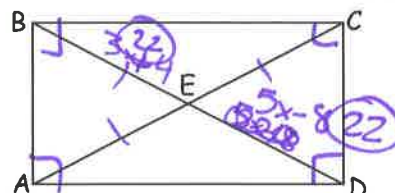


17. The given figure ABCD is a rectangle. If $m\angle 1 = 68^\circ$, then find x .



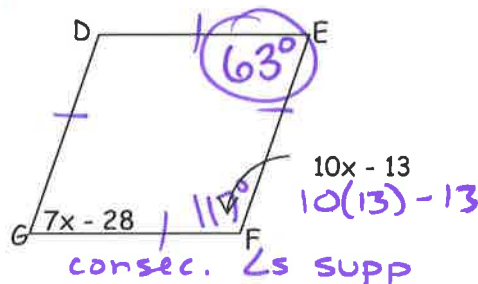
Handwritten: $x = 136^\circ$

16. In rectangle ABCD, $BE = 3x + 4$ and $DE = 5x - 8$, then find AC. = 44



Handwritten work:
 $3x + 4 = 5x - 8$
 $12 = 2x$
 $6 = x$

18. DEFG is a rhombus. Find $m\angle E$.

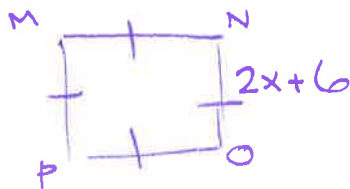


Handwritten work:
 $7x - 28 + 10x - 13 = 180$
 $17x - 41 = 180$
 $17x = 221$
 $x = 13$

Directions: (Multiple Choice) Choose the best answer choice.

19. The perimeter of a square MNOP is 72in and $NO = 2x + 6$. What is the value of x .

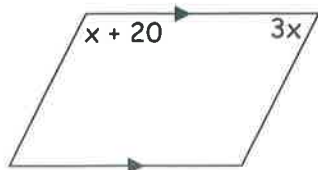
- (A) 15
 (B) 12
 (C) 6
 (D) 9
 (E) 18



Handwritten work:
 $4(2x + 6) = 72$
 $8x + 24 = 72$
 $8x = 48$
 $x = 6$

21. What value of x will make the quadrilateral a parallelogram? consec. $\angle$ s supp

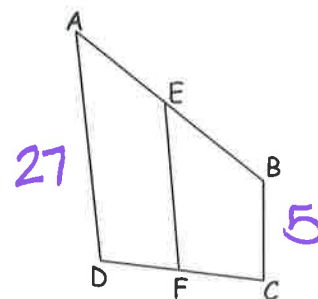
- (A) 5
 (B) 10
 (C) 50
 (D) 40
 (E) 60



Handwritten work:
 $x + 20 + 3x = 180$
 $4x = 160$
 $x = 40$

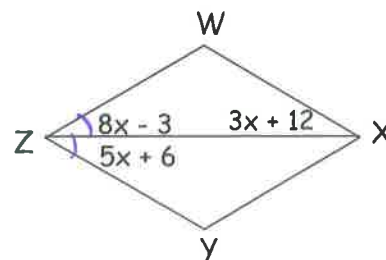
20. ABCD is a trapezoid. The length of $AB = 13$, $AD = 15$, and $BC = 5$. Find the length of midsegment EF . $ADD \Rightarrow AD = 27$

- (A) 5
 (B) 11
 (C) 16
 (D) 8
 (E) 22



22. WXYZ is a rhombus. What is the value of x ?

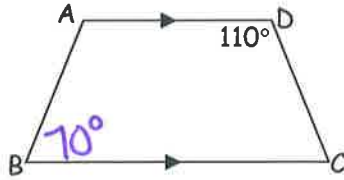
- (A) 9
 (B) 3
 (C) 4
 (D) $\frac{2}{3}$
 (E) 1



Handwritten work:
 $8x - 3 = 5x + 6$
 $3x = 9$
 $x = 3$

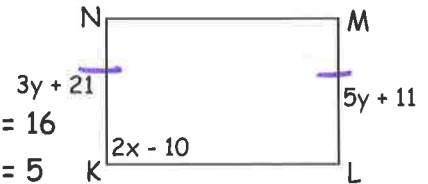
23. In isosceles trapezoid ABCD, find $m\angle B$.

- (A) 110°
 (B) 55°
 (C) 70°
 (D) 60°
 (E) 140°



24. KLMN is a rectangle. Find the values of x and y .

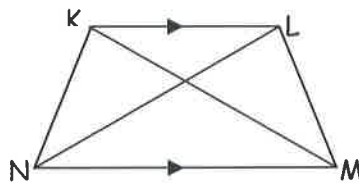
- (A) $X = 50, y = 16$
 (B) $X = 40, y = 5$
 (C) $X = 40, y = 16$
 (D) $X = 50, y = 5$
 (E) $X = 50, y = 4$



Handwritten work for problem 24:
 $3y + 21 = 5y + 11$
 $10 = 2y$
 $5 = y$
 $2x - 10 = 10$
 $2x = 20$
 $x = 10$

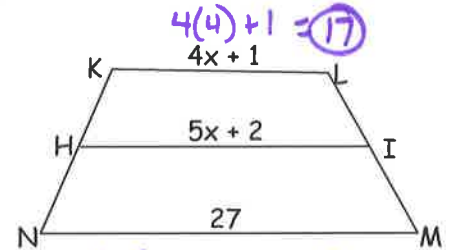
25. In trapezoid KLMN, $\overline{KL}$ and $\overline{NM}$ are

- (A) Legs
 (B) Bases
 (C) Consecutive angles
 (D) Diagonals
 (E) None of these



26. Find the length of $\overline{KL}$ in the trapezoid.

- (A) 22
 (B) 4
 (C) 13
 (D) 17
 (E) 27

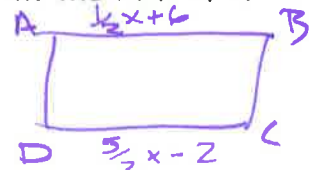


Handwritten work for problem 26:
 $4(4) + 1 = 17$
 $5x + 2 = \frac{1}{2}(4x + 1 + 27)$
 $2[5x + 2] = \frac{1}{2}(4x + 28)$
 $10x + 4 = 4x + 28$
 $6x = 24$
 $x = 4$

27. The diagonals of a rectangle must

- (A) bisect each other
 (B) be perpendicular
 (C) be congruent
 (D) A and B
 (E) A and C

28. In rectangle ABCD, $AB = \frac{1}{2}x + 6$ and $CD = \frac{5}{2}x - 2$. Find the value of x .



- (A) 4
 (B) $\frac{3}{4}$
 (C) 5
 (D) 2
 (E) $\frac{2}{3}$

Handwritten work for problem 28:
 $\frac{1}{2}x + 6 = \frac{5}{2}x - 2$
 $-\frac{1}{2}x + 2 = -\frac{1}{2}x + 2$
 $8 = 2x$
 $4 = x$

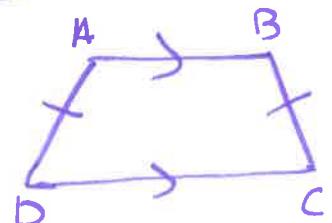
29. The midsegment of a trapezoid is 9cm long. What choice below is NOT a possible choice for the lengths of the bases.

- (A) 2, 16
 (B) 5, 4
 (C) 8, 10
 (D) 6, 12
 (E) 5, 13

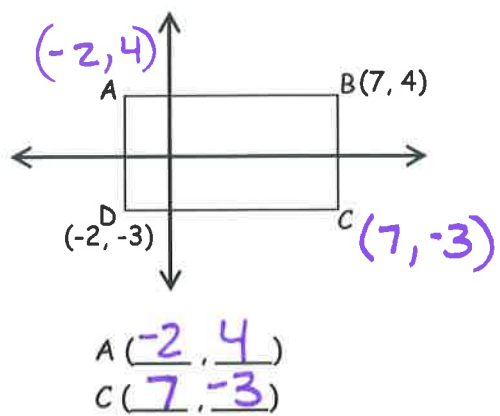
30. Which statements below must be true if ABCD is an isosceles trapezoid with a leg $\overline{AD}$?

- I. $\overline{AB} \cong \overline{DC}$
 II. $\overline{AD} \cong \overline{BC}$
 III. $\overline{AB} \parallel \overline{DC}$
 IV. $\overline{AD} \parallel \overline{BC}$

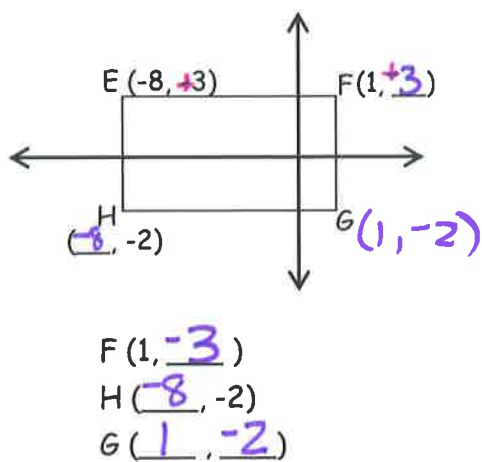
- (A) I and III
 (B) I and IV
 (C) II and III
 (D) II and IV
 (E) I, II, and III



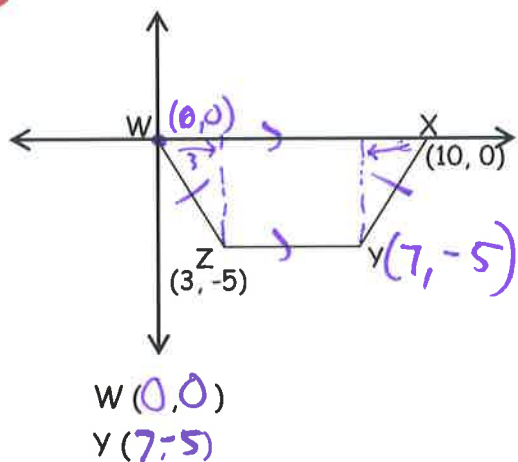
31. Rectangle



32. Rectangle



33. Isosceles Trapezoid



34. Square

