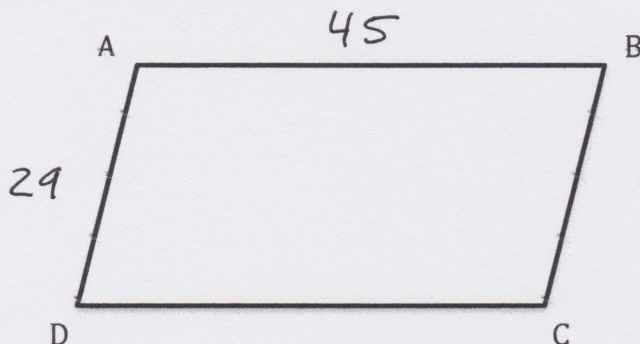


Pre-Test on Quadrilaterals

Directions: For problems 1-10, there are various quadrilaterals with given lengths and angles. Solve for the lengths and angles for which you are asked. Keep in mind that these figures are **NOT** necessarily drawn to scale. If a length or an angle that you are solving for is not a whole number, round to the nearest tenth. This assignment will not be graded, but it will be used to plan out future lessons on this topic. **Please show your work.**

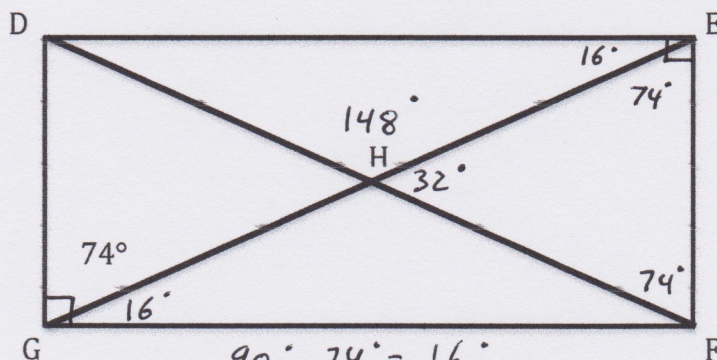
1. The figure below is a parallelogram. If $AB = 45$ and $AD = 29$, what are the length values for BC and DC ?



$$BC = \underline{29}$$

$$DC = \underline{45}$$

2. The figure below is a rectangle with diagonals. What are the following angle measures?



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

$$m\angle EGF = \underline{16^\circ}$$

$$m\angle DEH = \underline{16^\circ}$$

$$m\angle HEF = \underline{74^\circ}$$

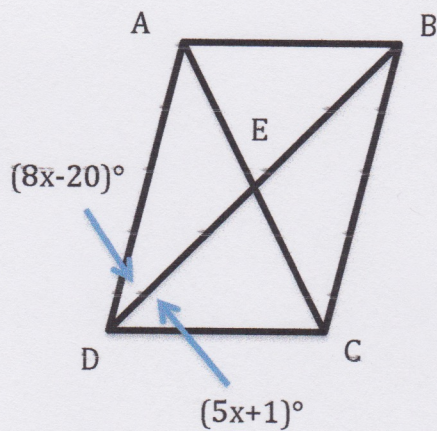
$$m\angle DHE = \underline{148^\circ}$$

$$m\angle EHF = \underline{32^\circ}$$

$$180^\circ - 32^\circ = 148^\circ$$

$$180^\circ - 74^\circ - 74^\circ = 32^\circ$$

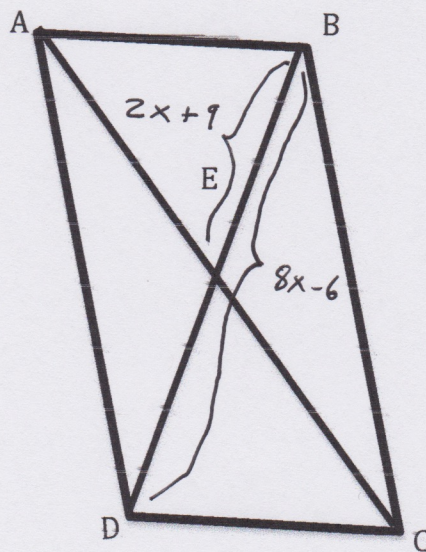
3. The figure below is a rhombus with diagonals. If $m\angle ADE = (8x-20)^\circ$ and the $m\angle CDE = (5x+1)^\circ$, what is the value of x ?



$$x = \underline{7}$$

$$\begin{aligned} 8x - 20 &= 5x + 1 \\ 3x &= 21 \\ x &= 7 \end{aligned}$$

4. The figure below is a parallelogram with diagonals. If $BD = 8x-6$ and $BE = 2x+9$, what is the length of BD and BE ?



$$\begin{aligned} 8x - 6 &= 2(2x + 9) \\ 8x - 6 &= 4x + 18 \\ 4x &= 24 \\ x &= 6 \end{aligned}$$

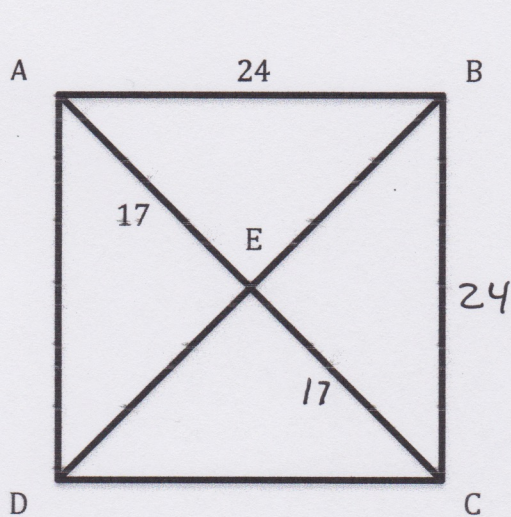
$$\begin{aligned} BD &= 8(6) - 6 \\ &= 48 - 6 \\ &= 42 \end{aligned}$$

$$\begin{aligned} BE &= 2(6) + 9 \\ &= 21 \end{aligned}$$

$$BD = \underline{42}$$

$$BE = \underline{21}$$

5. The following figure is a square with diagonals. Find the following lengths and angle measurements.



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

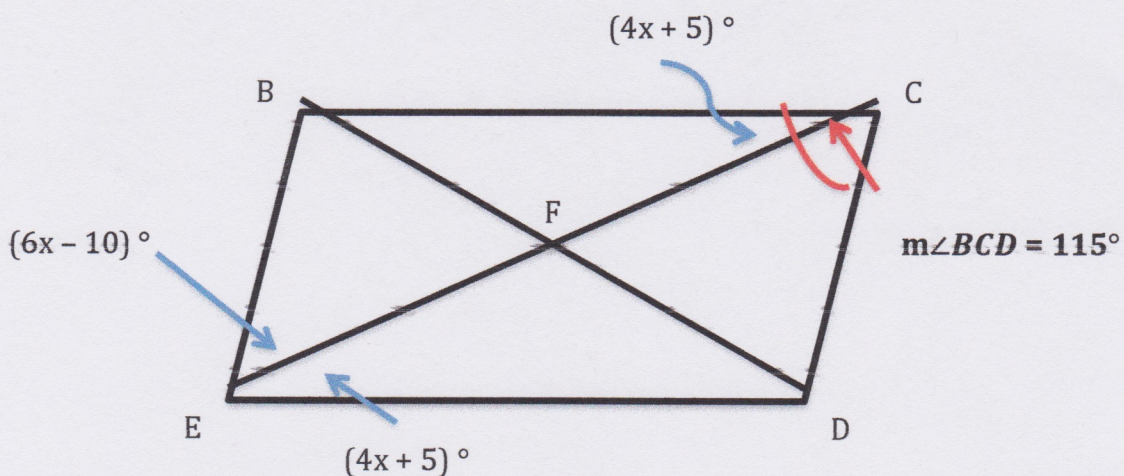
$$m\angle BCE = \underline{45^\circ}$$

$$CE = \underline{17}$$

$$BC = \underline{24}$$

6. The following figure is a parallelogram with diagonals. Given the following information, what is the $m\angle BEF$?

- $m\angle BCF = (4x + 5)^\circ$
- $m\angle BEF = (6x - 10)^\circ$
- $m\angle DEF = (4x + 5)^\circ$
- $m\angle BCD = 115^\circ$



$$m\angle BEF = \underline{62^\circ}$$

$$6x - 10 + 4x + 5 = 115$$

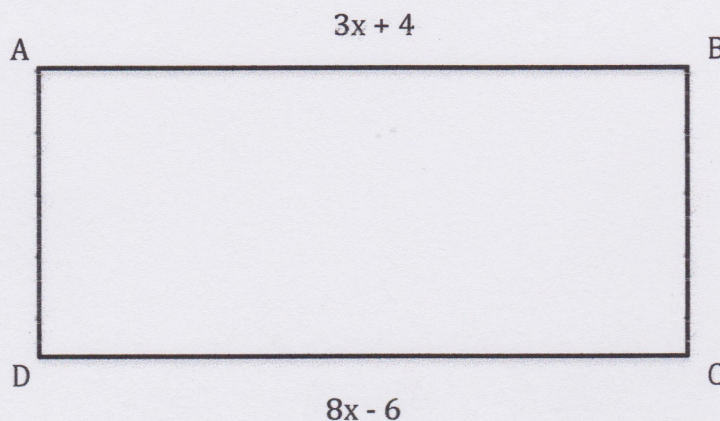
$$10x - 5 = 115$$

$$10x = 120$$

$$x = 12$$

$$m\angle BEF = 6(12) - 10 = 62^\circ$$

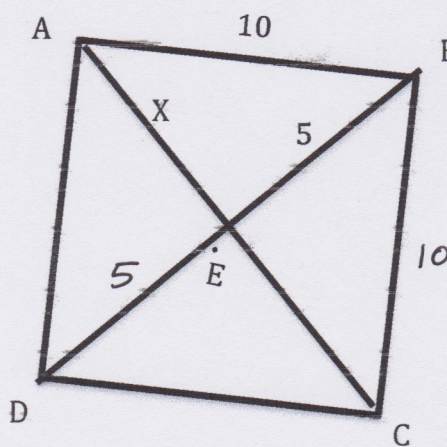
7. The figure below is a rectangle. Given that length $AB = 3x + 4$ and length $DC = 8x - 6$, what is the numerical length of AB ?



$$\begin{aligned} 3x + 4 &= 8x - 6 \\ 5x - 6 &= 4 \\ 5x &= 10 \\ x &= 2 \\ AB &= 3(2) + 4 \\ &= 6 + 4 \\ &= 10 \end{aligned}$$

$AB = \underline{10}$

8. The figure below is a rhombus with diagonals. Given that $AE = X$, $AB = 10$, and $BE = 5$, what is the value of the following lengths?



$$\begin{aligned} X^2 + 5^2 &= 10^2 \\ X^2 &= 100 - 25 \\ X^2 &= 75 \\ X &= 8.66 \\ X &= 8.7 \\ AE &= 8.7 \\ BD &= 5 + 5 = 10 \end{aligned}$$

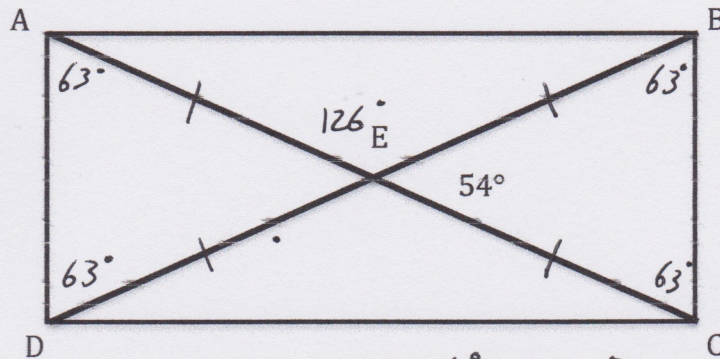
$BC = \underline{10}$

$DE = \underline{5}$

$AE = \underline{8.7}$

$BD = \underline{10}$

9. The figure below is a rectangle with diagonals. If $m\angle BEC = 54^\circ$, find the following angle measures:



$$180^\circ - 54^\circ = 126^\circ \quad 180^\circ - 54^\circ = \frac{126^\circ}{2} = 63^\circ$$

$$m\angle AEB = 126^\circ$$

$$m\angle BCE = 63^\circ$$

$$m\angle ADB = 63^\circ$$

$$m\angle ABD = 27^\circ$$

$$m\angle DAE = 63^\circ$$

$$m\angle EBC = 63^\circ$$

$$90^\circ - 63^\circ = 27^\circ$$

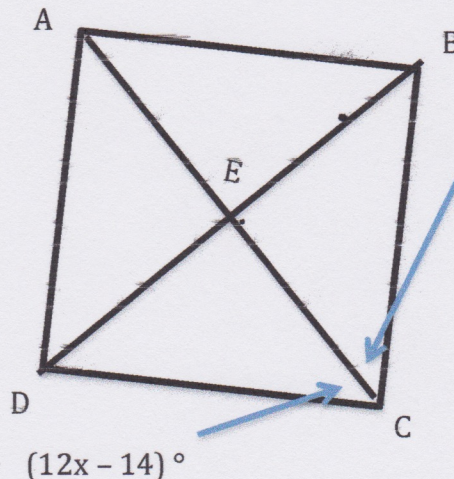
10. The figure below is a rhombus with diagonals. Given that $m\angle BCE = (8x + 6)^\circ$ and $m\angle DCE = (12x - 14)^\circ$, what is the $m\angle ADC$?

OR:

$$m\angle BCE = 8(5) + 6 = 46^\circ$$

$$m\angle BCD = (46^\circ)(2) = 92^\circ$$

$$m\angle ADC = 180^\circ - 92^\circ = 88^\circ$$



$$12x - 14 = 8x + 6$$

$$4x - 14 = 6$$

$$4x = 20$$

$$(8x + 6)^\circ \times 5$$

$$m\angle BCE = 8(5) + 6 = 46^\circ$$

$$m\angle ADC = 180^\circ - 46^\circ - 46^\circ = 88^\circ$$

$$m\angle ADC = 88^\circ$$