

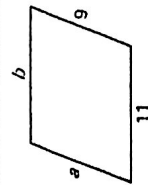
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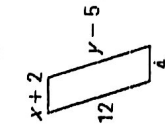
Practice Worksheet: How do you use properties of parallelograms to solve problems?

Find the value of each variable in the parallelogram.



$$b = 11$$

$$a = 9$$

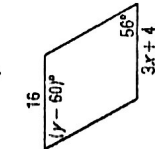


$$x + 2 = 4$$

$$y - 5 = 12$$

$$x = 2$$

$$y = 17$$



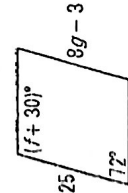
$$3x + 4 = 16$$

$$y - 60 = 56$$

$$3x = 12$$

$$y = 116$$

$$x = 4$$



$$8g - 3 = 25$$

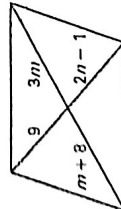
$$8g = 28$$

$$g = 28/8 = 3\frac{1}{2}$$

$$1f + 30 = 180$$

$$f + 102 = 180$$

$$f = 78$$



$$9 = 2n - 1$$

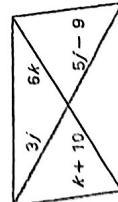
$$10 = 2n$$

$$5 = n$$

$$3m = m + 8$$

$$2m = 8$$

$$m = 4$$



$$3j = 5j - 9$$

$$-2j = -9$$

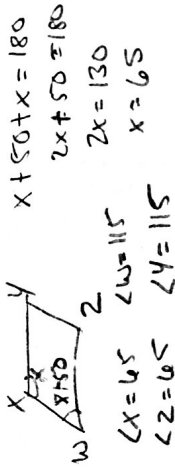
$$j = 4.5$$

$$6k = k + 10$$

$$5k = 10$$

$$k = 2$$

7. In $\square WXYZ$, $m\angle W$ is 50 degrees more than $m\angle X$. Sketch $\square WXYZ$. Find the measure of each interior angle. Then label each angle with its measure.



$$x + 50 + x = 180$$

$$2x + 50 = 180$$

$$2x = 130$$

$$x = 65$$

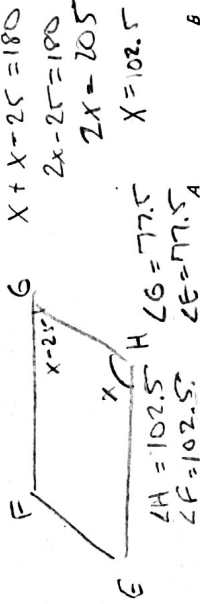
$$\angle X = 65$$

$$\angle Z = 65$$

$$\angle Y = 115$$

$$\angle W = 115$$

8. In $\square EFGH$, $m\angle G$ is 25 degrees less than $m\angle H$. Sketch $\square EFGH$. Find the measure of each interior angle. Then label each angle with its measure.



$$x + x - 25 = 180$$

$$2x - 25 = 180$$

$$2x = 205$$

$$x = 102.5$$

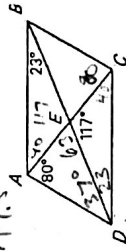
$$\angle H = 102.5$$

$$\angle G = 77.5$$

$$\angle F = 102.5$$

$$\angle E = 77.5$$

Find the indicated measure in $\square ABCD$.



$$x + 120 + 23 = 180$$

$$x + 143 = 180$$

$$x = 37$$

9. $m\angle AEB = 117$

10. $m\angle BAE = 40$

11. $m\angle AED = 63$

12. $m\angle ECB = 85$

13. $m\angle BAD = 120$

14. $m\angle DCE = 40$

15. $m\angle ADC = 37$

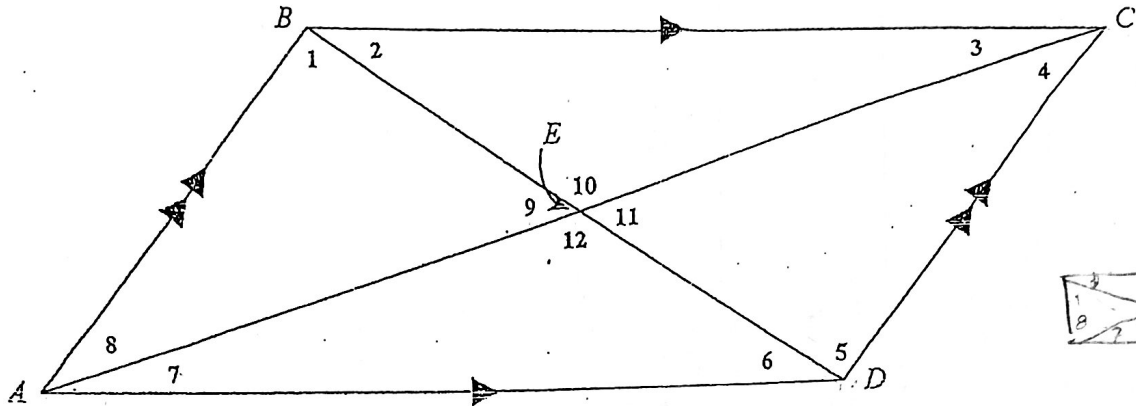
16. $m\angle DCB = 120$

$$\frac{180}{-140} = \frac{40}{-40}$$

$$\frac{117}{23} = \frac{170}{170}$$

$$\frac{160}{-117} = \frac{63}{-63}$$

Parallelograms – Using Properties



Complete each of the following:

- 1) $m\angle 1 = m\angle$ 5 2) $m\angle 7 = m\angle$ 3 3) $m\angle ABC = m\angle$ ADC
 4) $m\angle BCD = m\angle$ BAD 5) $m\angle 9 = m\angle$ 11 6) $mBE = m$ DE
 7) $mAB = m$ DC 8) $\triangle ABD \cong \triangle$ CBD 9) $\triangle CAB \cong \triangle$ CAD
 10) $2 \cdot mBE = m$ BD 11) $mAD = m$ BC 12) $mAE = m$ CE
 13) $\angle BAD$ is supplementary with \angle ADC and also with \angle ABC.

IF $ABCD$ is a *rectangle*, then:

- 14) $m\angle ABC =$ 90° 15) $mAC = m$ BD 16) $m\angle 2 + m\angle 5 =$ 90°
 17) $m\angle 2 = m\angle$ 6 $= m\angle$ 3 $= m\angle$ 7 18) The diagonals form 4 isosceles Δ 's

IF $ABCD$ is a *rhombus*, then:

- 19) $m\angle 10 =$ 90° 20) $m\angle 2 + m\angle 3 =$ 90° 21) $mAB \cong$ mBC
 22) $m\angle 8 = m\angle$ 4 $= m\angle$ 2 $= m\angle$ 6

IF $ABCD$ is a *square*, then:

- 23) $mAC = m$ BD 24) $m\angle 9 = m\angle 10 = m\angle 11 = m\angle 12 =$ 90°
 25) $m\angle 1 = m\angle 2 = m\angle 3 = m\angle 4 = m\angle 5 = m\angle 6 = m\angle 7 = m\angle 8 =$ 45°