

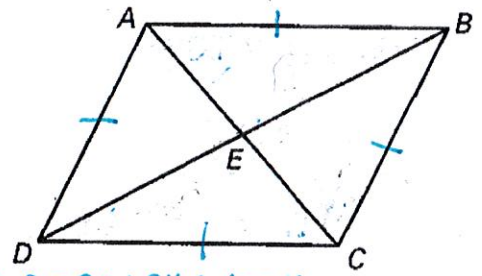
Day 2 – Properties of Rhombi, Squares, Trapezoids and Kites

Decide whether the statement is *sometimes*, *always*, or *never* true.

1. A rhombus is equilateral. *Always*
2. The diagonals of a rectangle are perpendicular. *Sometimes, if square*
3. The opposite angles of a rhombus are supplementary. *Sometimes, if square*
4. A square is a rectangle. *Always*
5. The diagonals of a rectangle bisect each other. *Always*
6. The consecutive angles of a square are supplementary. *Always*

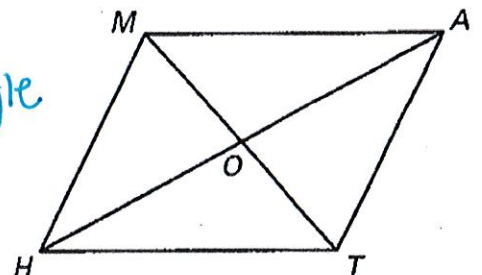
Quadrilateral $ABCD$ is a rhombus.

7. If $m\angle BAE = 32^\circ$, find $m\angle ECD$. *32*
8. If $m\angle EDC = 43^\circ$, find $m\angle CBA$. *86*
9. If $m\angle EAB = 57^\circ$, find $m\angle ADC$. *66*
10. If $m\angle BEC = 3x - 15^\circ$, solve for x . *$3x - 15 = 90$; $x = 35$*
11. If $m\angle ADE = 5x - 8^\circ$ and $m\angle CBE = 3x + 24$, solve for x . *$5x - 8 = 3x + 24$; $x = 16$*
12. If $m\angle BAD = 4x + 14^\circ$ and $m\angle ABC = 2x + 10^\circ$, solve for x . *$4x + 14 + 2x + 10 = 180$; $x = 26$*



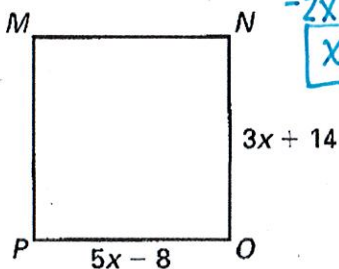
$MATH$ is a parallelogram with diagonals intersecting at O . Identify the type depending upon the given conditions.

13. $\overline{MT} \perp \overline{AH}$ *Rhombus*
14. $\overline{MT} \cong \overline{AH}$ *Rectangle*
15. $\overline{MA} \perp \overline{AT}$, $\overline{AM} \cong \overline{MH}$ *square*
16. $\overline{MO} \cong \overline{OT}$, $\overline{AO} \cong \overline{OH}$ *Parallelogram*

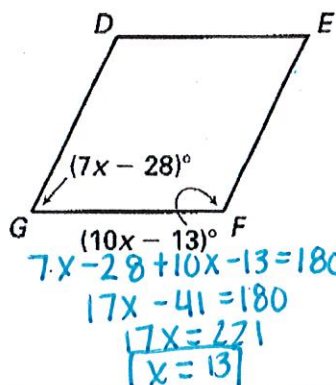


Find the value of x .

17. $MNOP$ is a square. *$3x + 14 = 5x - 8$* 18. $DEFG$ is a rhombus.

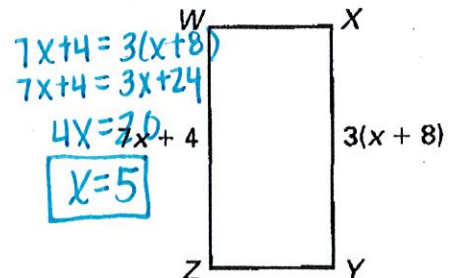


*$-2x = -22$
 $x = 11$*



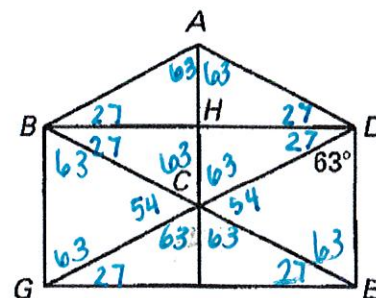
*$7x - 28 + 10x - 13 = 180$
 $17x - 41 = 180$
 $17x = 221$
 $x = 13$*

19. $WXYZ$ is a rectangle.



*$7x + 4 = 3(x + 8)$
 $7x + 4 = 3x + 24$
 $4x = 20$
 $x = 5$*

In the diagram shown, $BDEG$ is a rectangle and $ABCD$ is a rhombus. Find the measure of the indicated angle.



1. $\angle GDB$ 27°
2. $\angle ABC$ 54°
3. $\angle DAB$ 126°
4. $\angle BCG$ 54°
5. $\angle GCE$ 126°
6. $\angle DEG$ 90°
7. $\angle AHB$ 90°
8. $\angle DGB$ 63°

Find the length or angle measure.

14. $WXYZ$ is a square.

$$WX = 1 - 10x \quad (-1) = 11$$

$$YZ = 14 + 3x$$

$$XY = \underline{\quad ? \quad} \parallel$$

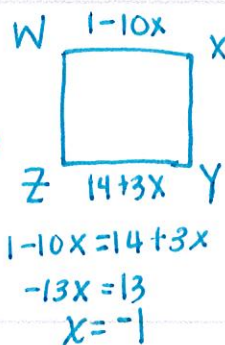
15. $WXYZ$ is a rhombus.

$$m\angle X = 24(10 - x)^\circ = 120$$

$$m\angle Z = 6(x + 15)^\circ$$

$$m\angle Y = \underline{\quad ? \quad} 60^\circ$$

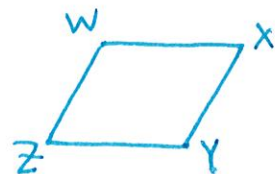
$$180 - 120 = 60$$



$$1 - 10x = 14 + 3x$$

$$-13x = 13$$

$$x = -1$$



$$240 - 24x = 6x + 90$$

$$-30x = -150$$

$$x = 5$$

Challenge Section:

Decide whether the statement is *true* or *false*. Decide whether the converse is *true* or *false*. If both statements are *true*, write a biconditional statement.

9. If a quadrilateral is a rectangle, then it is a parallelogram.
10. If a quadrilateral is a parallelogram, then it is a rhombus.
11. If a quadrilateral is a square, then it is a rhombus.
12. If a quadrilateral is a rectangle, then it is a rhombus.
13. If a rhombus is a square, then it is a rectangle.