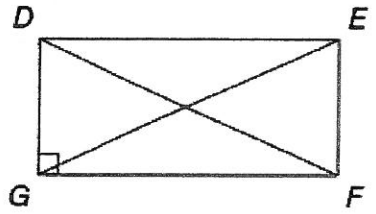
Name: _____ Date: _____ per: _____

Chapter 6 (Section 4) – Day 5 — Special Parallelograms

Homework: Worksheet

Warm - Up

1. **Quadrilateral *DEFG* is a rectangle.**
If $FD = 3x - 7$ and $EG = x + 5$, find EG.



$3x - 7 = x + 5$

$2x = 12$

$x = 6$

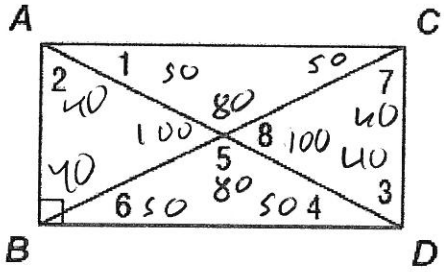
$EG = 11$

$EG = 6 + 5 = 11$

$FD = 3(6) - 7$

$= 11$

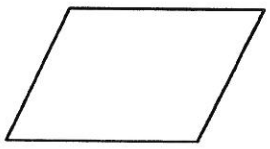
2. **Quadrilateral *ABCD* is a rectangle. Find each measure if $m\angle 2 = 40$.** (Figure not drawn to Scale!!)



$m\angle 1 =$ 50 °	$m\angle 5 =$ 80 °
$m\angle 2 = 40°$	$m\angle 6 =$ 50 °
$m\angle 3 =$ 40 °	$m\angle 7 =$ 40 °
$m\angle 4 =$ 50 °	$m\angle 8 =$ 100 °

Rhombus

Definition: A **rhombus** is a parallelogram with 2 congruent consecutive sides.

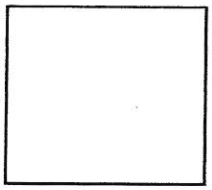


Properties of a Rhombus

1. A rhombus has all the properties of a parallelogram.
2. A rhombus is equilateral.
3. The diagonals of a rhombus are perpendicular to each other.
4. The diagonals of a rhombus bisect its angles.

Square

Definition: A **square** is a rectangle with 2 congruent consecutive sides.

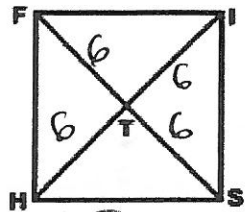


Properties of a Square

1. A square has all the properties of a rectangle.
2. A square has all the properties of a rhombus.

PART 4. SQUARES & RHOMBI
Find the indicated measure.

$\sqrt{72}$ 30. FISH is a square with IT = 6. Find IH and IS.



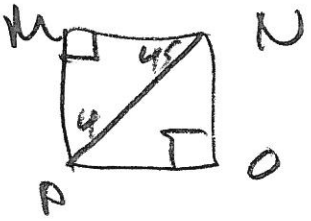
$x^2+x^2=2x^2=\overline{15}^2$

$6^2+6^2=2(6)^2$

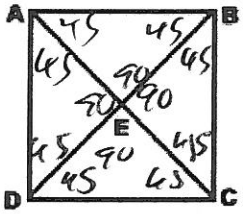
$=72=\overline{15}^2$

$\overline{15}^{6}=\sqrt{72}=6\sqrt{2}$

45° 31. If MNOP is a square, what is m∠MNP?



Use square ABCD and the given information to find each value.



30 32. If m∠AEB = (3x)°, find 'x'.

$3x=90$ $(x=30)$

5 33. If m∠BAC = (9x)°, find 'x'.

$45=9x$ $(x=5)$

22 34. If AB = 2x + 4 and CD = 3x – 5, find BC. Find BC and BD.

$2x+4=3x-5$

$9=x$

$2(9)+4=22$ $3(9)-5=22$

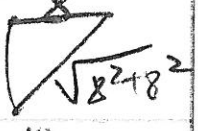
$8\sqrt{2}$ a. The perimeter of the square is 32 cm. Find the length of diagonal DB.

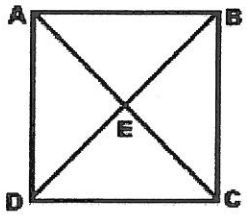
$\sqrt{128}$

≈ 11.31

$4x=32$

$x=8$





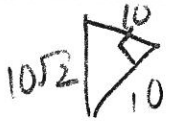
$10\sqrt{2}$ b. DE = 10, find AD.

$\sqrt{200}$

14.14

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

$\sqrt{200}$



$2\sqrt{2}$ c. The area of the square is 16. Find EC.

$\sqrt{8}$

2.828

$x^2+x^2=4^2$

$2x^2=16$ $x^2=8$

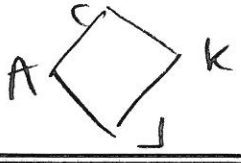
$4=x\sqrt{2}$

$\frac{4}{\sqrt{2}}=x$ $\frac{4\sqrt{2}}{2}=2\sqrt{2}$ ≠21

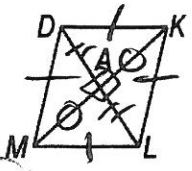
Find the indicated value.

$6y+4=3y+16$
$3y=12$
$y=4$

4 35. ACKJ is a rhombus. AC = 6y + 4, CK = 5y + 8, and KJ = 3y + 16. Find the value of 'y'.



$6y+4=5y+8$
$y=4$
$5y+8=3y+16$
$2y=8$
$y=4$

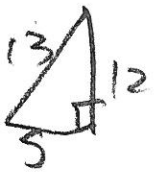


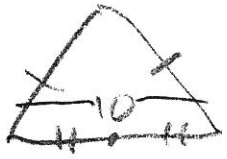
8 a. **Quadrilateral *DKLM* is a rhombus.**
If *DK* = 8, find *KL*.

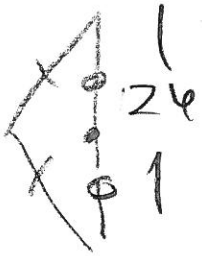
24 b. **Quadrilateral *DKLM* is a rhombus.**
If *DA* = 4x and *AL* = 5x – 3, find *DL*.

$4x=5x-3$
$x=3$
$4(3)=12$
$5(3)-3=12$
$DL=12+12=24$

13 c. The diagonals of a Rhombus are 10, and 24 cm. Find the length of the side of the rhombus.

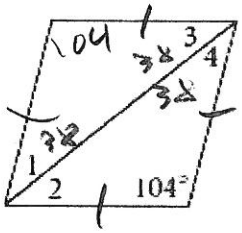






m∠1 = 38°
m∠2 = 38°
m∠3 = 38°
m∠4 = 38°

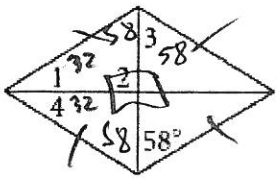
Find the measures of the numbered angles in each rhombus.



$\frac{76}{2}=38$

m∠1 = 32°
m∠2 = 90°
m∠3 = 58°
m∠4 = 32°

Find the measures of the numbered angles in each rhombus.



$90-58=32$

Homework

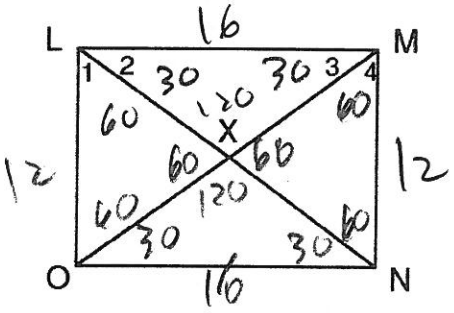
Properties of the Rectangle, Rhombus, and Square

Rectangle
all properties of parallelograms
plus
—all diagonals are congruent
—all angles measure 90°

Rhombus
all properties of parallelograms
plus
—all sides are congruent
—all diagonals are perpendicular
—all diagonals bisect opposite angles

Square
all properties of
—parallelogram
—rectangle
—rhombus

Use the properties to solve for the missing measures in the diagrams.

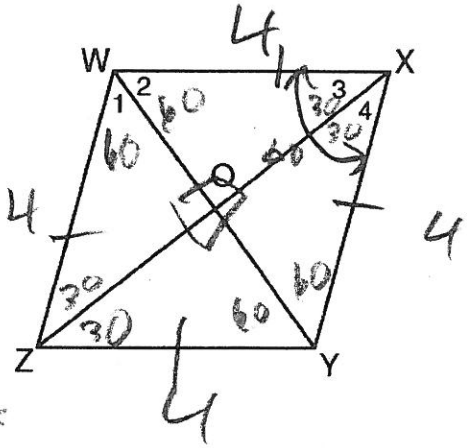


1. LMNO is a rectangle. If LM = 16, MN = 12, and ∠1 = 60°, find the following:

a. ON = 16 d. LX = 10 g. OX = 10
b. OL = 12 e. ∠LON = 90° h. ∠3 = 30
c. LN = 20 f. ∠2 = 30° i. ∠4 = 60

$\sqrt{12^2+16^2}$

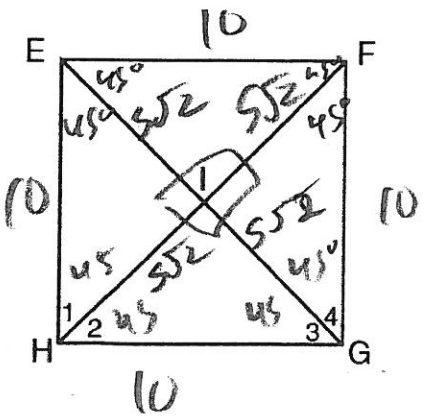
$\sqrt{400} = 20$



2. WXYZ is a rhombus. If WX = 4 and ∠WXY = 60°, find the following:

a. XY = 4 d. ∠2 = 60° g. WO = 2
b. ∠ZWX = 120° e. ∠3 = 30° h. OX = $2\sqrt{3}$
c. ∠1 = 60° f. ∠4 = 30° i. WY = $4\sqrt{3}$

need 30/60/90 or SOHCAHTOA



3. EFGH is a square. If EF = 10, find the following:

a. FG = 10 d. EI = $5\sqrt{2}$ g. ∠1 = 45°
b. ∠EFG = 90° e. IF = $5\sqrt{2}$ h. ∠3 = 45°
c. EG = $10\sqrt{2}$ f. ∠EIF = 90° i. HF = $10\sqrt{2}$

$\sqrt{200}$

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