

Unit 4 Test Review  
 Quadrilaterals

1. Determine whether the statement is (A)lways, (S)ometimes, or (N)ever True.

a) The diagonals of a rectangle are congruent.

A S N

b) The diagonals of a parallelogram are perpendicular.

A S N

c) A parallelogram is a rhombus.

A S N

d) The diagonals of a rhombus bisect each other.

A S N

e) A rhombus is equilateral.

A S N

2. Quadrilateral ABCD is a parallelogram.

a)  $m\angle BAC = 54^\circ$ ,

find  $m\angle DCA = \underline{54^\circ}$

b)  $m\angle ADC = 78^\circ$ ,

find  $m\angle DAB = \underline{102^\circ}$

c)  $m\angle DCB = 142^\circ$  &  $m\angle DCA = 37^\circ$ ,

find  $m\angle BAC = \underline{37^\circ}$

d)  $m\angle ABC = 73^\circ$  &  $m\angle DBA = 31^\circ$ ,

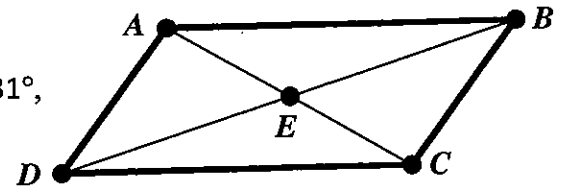
find  $m\angle DBC = \underline{42^\circ}$

e)  $AE = 14$  cm &  $DE = 18$  cm,

find  $EB = \underline{18}$

f)  $EC = 10$  cm &  $EB = 15$  cm,

find  $AC = \underline{20}$



3. Quadrilateral ABCD is a rhombus.

a)  $m\angle ADE = 27^\circ$ ,

find  $m\angle DAE = \underline{63^\circ}$

find  $m\angle ABD = \underline{27^\circ}$

b)  $m\angle CAB = 71^\circ$ ,

find  $m\angle CEB = \underline{90^\circ}$

c)  $m\angle ABC = 64^\circ$

find  $m\angle ABE = \underline{32^\circ}$

d)  $m\angle DAB = 140^\circ$

find  $m\angle ADE = \underline{20^\circ}$

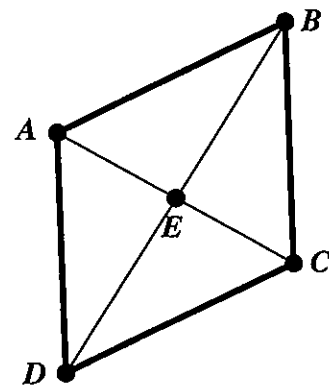
e)  $AE = 3$  cm &  $DE = 4$  cm,

find  $DB = \underline{8}$

find  $AD = \underline{5}$

f)  $AD = 13$  cm &  $BD = 24$  cm,

find  $AC = \underline{10}$



4. Quadrilateral ABCD is a rectangle.

a)  $m\angle BAC = 27^\circ$ ,

find  $m\angle ACB = \underline{63^\circ}$

find  $m\angle DAC = \underline{63^\circ}$

c)  $m\angle AEB = 144^\circ$ ,

find  $m\angle CAB = \underline{18^\circ}$

e)  $DE = 9\text{cm}$ ,

find  $AC = \underline{18\text{cm}}$

b)  $m\angle ADE = 74^\circ$

find  $m\angle DAE = \underline{74^\circ}$

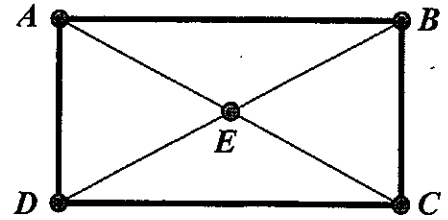
find  $m\angle BEC = \underline{32^\circ}$

d)  $m\angle BCA = 78^\circ$

find  $m\angle DAC = \underline{78^\circ}$

f)  $AD = 6\text{ cm} \ \& \ DC = 8\text{ cm}$ ,

find  $AE = \underline{5\text{cm}}$



$$6^2 + 8^2 = c^2$$

$$100 = c^2$$

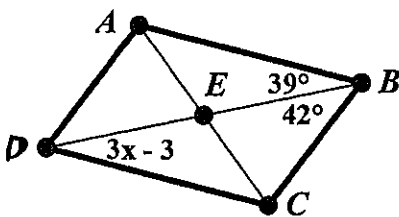
$$10 = c$$

$$10 = AC$$

5. Find the value for the variables.

a) Parallelogram

$x = \underline{14}$



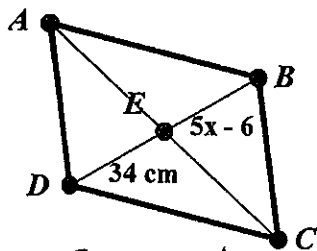
$$3x - 3 = 39$$

$$3x = 42$$

$$x = 14$$

b) Parallelogram

$x = \underline{8}$



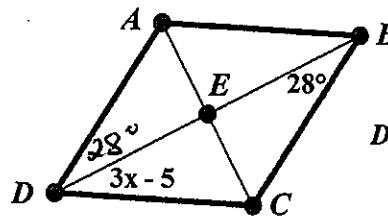
$$5x - 6 = 34$$

$$5x = 40$$

$$x = 8$$

c) Rhombus

$x = \underline{11}$



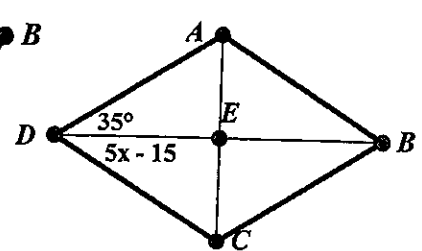
$$3x - 5 = 28$$

$$3x = 33$$

$$x = 11$$

d) Rhombus

$x = \underline{10}$



$$5x - 15 = 35$$

$$5x = 50$$

$$x = 10$$

6. Given parallelogram ABCD, determine the measurements.

a)  $m\angle DCB = \underline{81^\circ}$

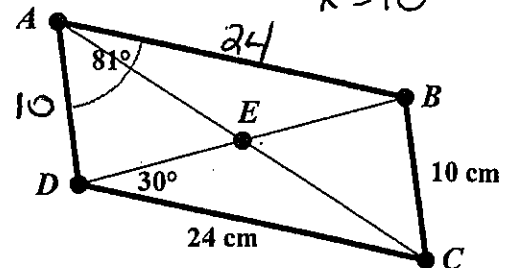
b)  $m\angle ADC = \underline{99^\circ}$

c)  $m\angle ADB = \underline{69^\circ}$

d)  $m\angle ABD = \underline{30^\circ}$

e)  $AD = \underline{10\text{ cm}}$

f)  $AB = \underline{24\text{ cm}}$



7. Determine which quadrilateral has these properties? (Pick all the correct answers).

Parallelogram

Rectangle

Rhombus

Square

a) Diagonals are congruent

Rectangle, Square

b) Diagonals are perpendicular

Rhombus, Square

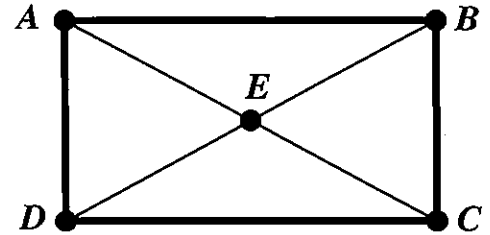
c) Diagonals bisect each other

ALL

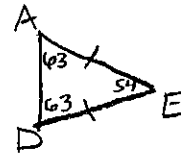
8. Determine the correct answers.

- |                                 |        |           |       |
|---------------------------------|--------|-----------|-------|
| a) A square is a rectangle      | Always | Sometimes | Never |
| b) A parallelogram is a rhombus | Always | Sometimes | Never |
| c) A rhombus is a square        | Always | Sometimes | Never |
| d) A square is a parallelogram  | Always | Sometimes | Never |

9. Given rectangle ABCD and the given information to solve each problem.

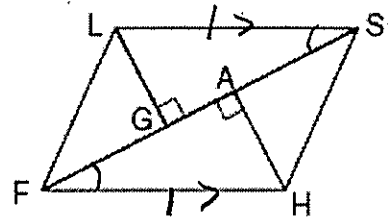


- a)  $AC = 4x - 54$  and  $BD = 33 + x$ , find  $x = \underline{29}$  &  $BD = \underline{62}$   
 $4x - 54 = 33 + x$
- b)  $AC = 4x - 60$  and  $AE = x + 5$ , find  $x = \underline{35}$  &  $EC = \underline{40}$   
 $4x - 60 = 2(x + 5)$
- c)  $m\angle BAC = 4x + 12$  and  $m\angle DAC = 5x + 24$ , find  $x = \underline{6}$  &  $m\angle DAC = \underline{54^\circ}$   
 $4x + 12 + 5x + 24 = 90$
- d)  $AE = 9$  cm,  $DC = 15$  cm, find  $AD = \underline{9.95}$  (round to nearest hundredth)  $18^2 = 15^2 + b^2$
- e)  $m\angle EAD = 63^\circ$ ,  $m\angle AED = 4x + 8$ , find  $x = \underline{11.5}$   
 $4x + 8 = 54$



10. Given: parallelogram FLSH, diagonal  $\overline{FGAS}$ ,  $\overline{LG} \perp \overline{FS}$ ,  $\overline{HA} \perp \overline{FS}$

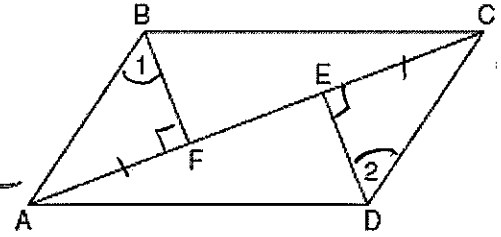
Prove:  $\triangle LGS \cong \triangle HAF$



- |  |   |
|--|---|
| <p>S</p> <ol style="list-style-type: none"> <li>1) Parallelogram FLSH,<br/><math>\overline{LG} \perp \overline{FS}</math>, <math>\overline{HA} \perp \overline{FS}</math></li> <li>2) <math>\overline{LS} \parallel \overline{FH}</math></li> <li>3) <math>\angle LSG \cong \angle HFA</math></li> <li>4) <math>\overline{LS} \cong \overline{FH}</math></li> <li>5) <math>\angle LGS</math> and <math>\angle HFA</math> are right angles</li> <li>6) <math>\angle LGS \cong \angle HFA</math></li> <li>7) <math>\triangle LGS \cong \triangle HAF</math></li> </ol> | <p>R</p> <ol style="list-style-type: none"> <li>1) Given</li> <li>2) Opp sides of a parallelogram are <math>\parallel</math></li> <li>3) When lines are <math>\parallel</math>, alt. int. <math>\angle</math>'s are <math>\cong</math></li> <li>4) Opp. sides of a parallelogram are <math>\cong</math></li> <li>5) <math>\perp</math> lines form right <math>\angle</math>'s</li> <li>6) Right <math>\angle</math>'s are <math>\cong</math></li> <li>7) AAS</li> </ol> |
|--|---|

11. Given: Quadrilateral  $ABCD$ , diagonal  $\overline{AC}$ ,  $\overline{AE} \cong \overline{FC}$ ,  $\overline{BF} \perp \overline{AC}$ ,  $\overline{DE} \perp \overline{AC}$ ,  $\angle 1 \cong \angle 2$

Prove:  $ABCD$  is a parallelogram.

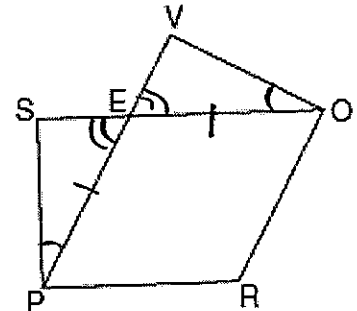


- S
- 1)  $\overline{AE} \cong \overline{FC}$ ,  $\overline{BF} \perp \overline{AC}$ ,  $\overline{DE} \perp \overline{AC}$ ,  $\angle 1 \cong \angle 2$
  - 2)  $\overline{EF} \cong \overline{EF}$
  - 3)  $\overline{AF} + \overline{EF} \cong \overline{EF} + \overline{EC}$
  - 4)  $\overline{AF} \cong \overline{EC}$
  - 5)  $\angle AFB$  and  $\angle CED$  are right  $\angle$ 's
  - 6)  $\angle AFB \cong \angle CED$
  - 7)  $\triangle AFB \cong \triangle CED$
  - 8)  $\overline{AB} \cong \overline{CD}$ ,  $\angle BAF \cong \angle DCE$
  - 9)  $\overline{AB} \parallel \overline{CD}$
  - 10)  $ABCD$  is a parallelogram

- R
- 1) Given
  - 2) Reflexive property
  - 3) Partition postulate
  - 4) Subtraction
  - 5)  $\perp$  lines form right  $\angle$ 's
  - 6) Right angles are  $\cong$
  - 7) AAS
  - 8) CPCTC
  - 9) When alt int  $\angle$ 's are  $\cong$ , lines are  $\parallel$
  - 10) A quad. with one pair of sides both  $\cong$  and  $\parallel$  is a parallelogram

12. Given:  $PROE$  is a rhombus,  $\overline{SE}$ ,  $\overline{PE}$ ,  $\angle SPV \cong \angle VOS$

Prove:  $\overline{SE} \cong \overline{EV}$



- S
- 1)  $PROE$  is a rhombus  
 $\angle SPV \cong \angle VOS$
  - 2)  $\overline{PE} \cong \overline{OE}$
  - 3)  $\angle SEP \cong \angle VEO$
  - 4)  $\triangle SEP \cong \triangle VEO$
  - 5)  $\overline{SE} \cong \overline{EV}$

- R
- 1) Given
  - 2) Rhombus has 4  $\cong$  sides
  - 3) Vertical  $\angle$ 's are  $\cong$
  - 4) ASA
  - 5) CPCTC