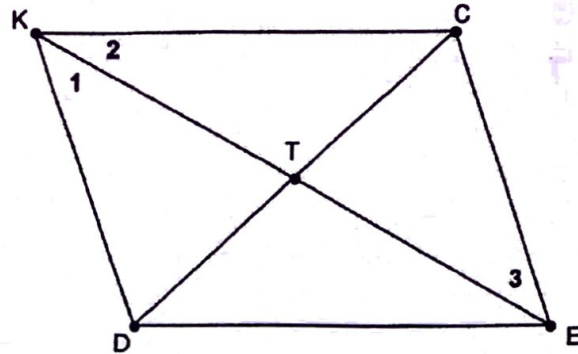


Properties of Parallelograms Worksheet

Parallelogram DECK



1. If $KT=2x+y$, $DT=x+2y$, $TE=12$, and $TC=9$, find x and y .

$x = \underline{5}$
 $y = \underline{2}$

2. If $DE=x+y$, $EC=12$, $CK=2x-y$, and $KD=3x-2y$, find x , y , and perimeter of parallelogram DECK.

$x = \underline{6}$
 $y = \underline{3}$
perimeter = 42

3. If $m\angle 1=4x$, $m\angle 2=3x$ and $m\angle 3=x^2-60$, find x and the $m\angle CED$.

$x = \underline{10}$
 $m\angle CED = \underline{70}$

4. If $m\angle 1=20$, $m\angle 2=x^2$, and $m\angle CED=9x$, find all possible answers for $m\angle 2$.

$m\angle 2 = \underline{25, 16}$

Honors Math 3
Day 1

Name: _____

5. MATH is a parallelogram. $MA = 3y + x$, $AT = 20$, $TH = 2(x + y - 1)$, and $HM = 5y$. What is the value of x and y ?

$$x = 6$$
$$y = 4$$

6. PQRS is a parallelogram:

a) If $PQ = x^2 - 10$ and $SR = 3x$, find all possible values of x .

$$x = \cancel{-2}, 5$$

b) If $PS = 9 - x^2$ and $QR = x + 2$, find all possible values of x .

$$x = 2.19, \cancel{-3.19}$$

c) If $m \angle P = (x^2)^\circ$ and $m \angle Q = (11x)^\circ$, find all possible values of x .

$$x = 9, \cancel{-20}$$

d) If $m \angle Q = 5x^\circ$, $m \angle S = (3x + 5y)^\circ$ and $m \angle R = (3x - 2y)^\circ$, find all possible values of x .

$$x = 25$$

e) If $m \angle P = (8y + 2)^\circ$, $m \angle S = (2x^2)^\circ$ and $m \angle R = (y^2 - 18)^\circ$, find all possible values of x .

$$x = \pm 7$$
$$y = 10, \cancel{-2}$$

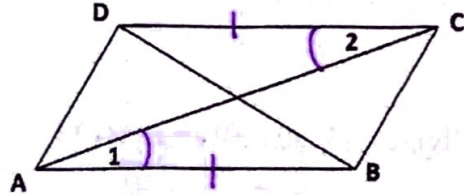
Quadrilaterals Jumble Proofs Homework

Rearrange the statements and reasons below to form a correct proof.

1. Given: $\angle 1 \cong \angle 2$

$\overline{AB} \cong \overline{CD}$

Prove: ABCD is a parallelogram



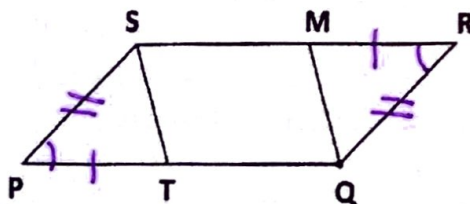
Statements	Reasons
$\angle 1 \cong \angle 2$ $\overline{AB} \cong \overline{CD}$	Given
$\angle 1, \angle 2$ alt. int. \angle s	Defn alt. int. \angle s
$\overline{AB} \parallel \overline{CD}$	if 2 lines cut by transv. \angle alt. int. \angle s \cong , then lines \parallel .
ABCD is parallelogram	if one pair opp. sides \cong & \parallel , then quad. is parallelogram

ABCD

PQRS is a parallelogram	If 2 lines are cut by a transversal and alternate interior angles are congruent, then the lines are parallel.
$\angle 1$ & $\angle 2$ are alternate interior angles	If one pair of opposite sides of a quadrilateral are both parallel and congruent, then it is a parallelogram.
$\overline{AB} \parallel \overline{CD}$	Definition of Alternate Interior Angles
$\angle 1 \cong \angle 2$ $\overline{AB} \cong \overline{CD}$	Given

2. Given: PQRS is a parallelogram
 $\overline{PT} \cong \overline{RM}$

Prove: $\overline{ST} \cong \overline{QM}$



Statements	Reasons
PQRS is parallelogram $\overline{PT} \cong \overline{RM}$	Given
$\angle P \cong \angle R$	if quad. is parallelogram, then opp. \angle s \cong .
$\overline{PS} \cong \overline{RQ}$	if quad is parallelogram, then opp. sides \cong .
$\triangle PST \cong \triangle RQM$	SAS
$\overline{ST} \cong \overline{QM}$	if 2 Δ s \cong , then corresp. parts \cong .

can switch

Statements	Reasons
$\triangle PST \cong \triangle RQM$	Side-Angle-Side
$\overline{ST} \cong \overline{QM}$	If 2 triangles are congruent, then their corresponding parts are congruent.
$\overline{PS} \cong \overline{RQ}$	Given
$\angle P \cong \angle R$	If a quadrilateral is a parallelogram, then opposite sides are congruent.
PQRS is a parallelogram $\overline{PT} \cong \overline{RM}$	If a quadrilateral is a parallelogram, then opposite angles are congruent.