Inspiring Greatness

INDEPENDENCE SCHOOL DISTRICT

Math Virtual Learning

Math 8

Parallel Lines Cut by a Transversal

April 13, 2020

Lesson: April 13th, 2020

Objective/Learning Target:

Students will solve problems involving parallel lines cut by a transversal.

Warm Up: Vocabulary

Defined

Parallel Line - lines that never intersect

Transversal - a line that intersects the parallel lines

Vertical Angles - angles that share a vertex but no sides

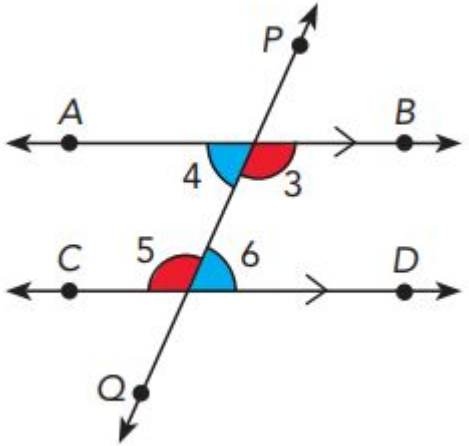
Matching

1.	Alternate	A.	Related to
2.	Interior	B.	Outside
3.	Exterior	C.	Same
4.	Corresponding	D.	Inside
5.	Congruent	E.	Different

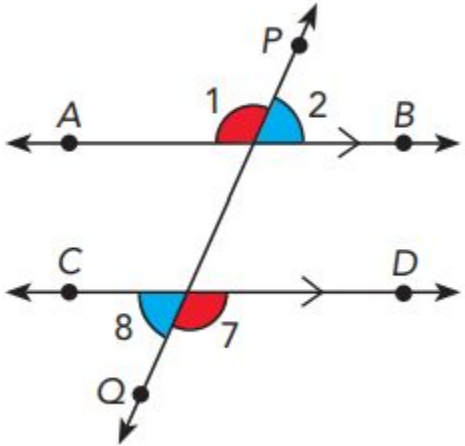
Answers: 1E, 2D, 3B, 4A, 5C

Guided Practice

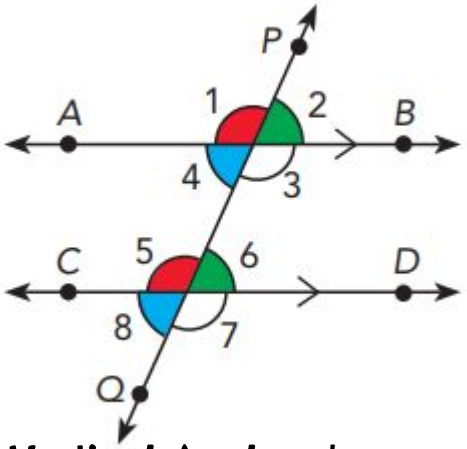
Alternate Interior Angles are on **opposite** sides of the transversal and **inside** the parallel lines



Alternate Exterior Angles are on **opposite** sides of the transversal and **outside** the parallel lines

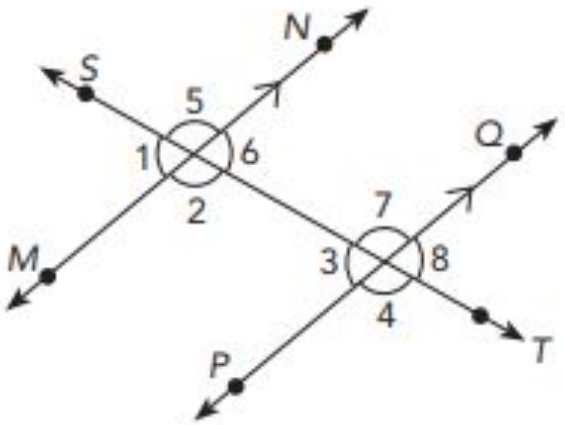


Corresponding Angles are in the same location if reference to the transversal and their parallel line



Vertical Angles share a vertex but no sides
Red and white angles and blue and green angles

Guided Practice



List 2 pairs of each type of congruent angles

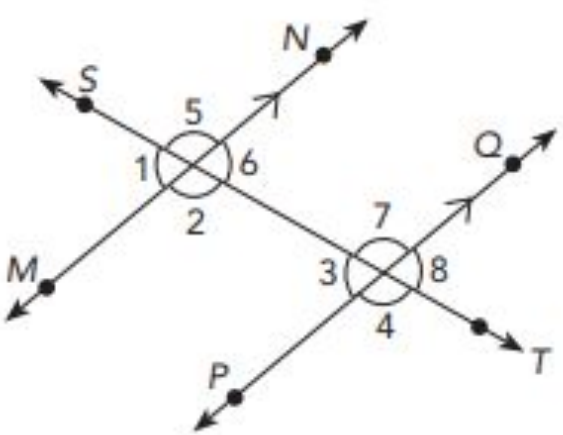
Alternate Interior Angles - ∠6 & ∠3 and

Alternate Exterior Angles - ∠1 & ∠8 and

Corresponding Angles - ∠2 & ∠4 and

Vertical Angles - ∠3 & ∠8 and

Guided Practice



List 2 pairs of each type of congruent angles

Alternate Interior Angles - ∠6 & ∠3 and ∠2 & ∠7

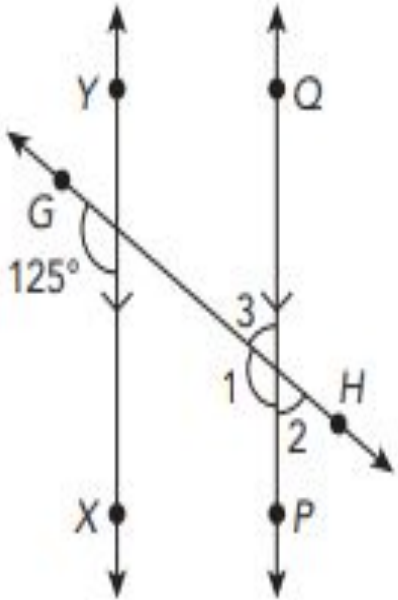
Alternate Exterior Angles - ∠1 & ∠8 and ∠5 & ∠4

Corresponding Angles - ∠2 & ∠4 and ∠1 & ∠3 or ∠5 & ∠7 or ∠6 & ∠8

Vertical Angles - ∠3 & ∠8 and ∠7 & ∠4 or ∠1 & ∠6 or ∠5 & ∠2

Guided Practice

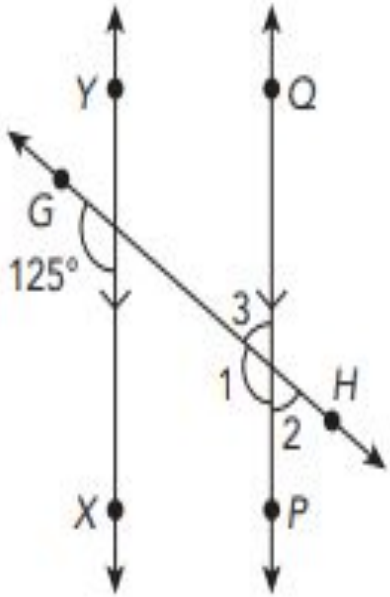
In the diagram, $\overleftrightarrow{XY}$ is parallel to $\overleftrightarrow{PQ}$. Find the measures of $\angle 1$, $\angle 2$, and $\angle 3$.



$m\angle 1 =$ _____	Corr. $\angle$s
$m\angle 1 + m\angle 3 =$ _____	Supp. $\angle$s
_____ $+ m\angle 3 =$ _____	Substitute $m\angle 1 =$ _____.
$m\angle 3 +$ _____ $- 125° =$ _____ $- 125°$	Subtract 125° from both sides.
$m\angle 3 =$ _____	Simplify.
$m\angle 3 =$ _____	Vert. $\angle$s
$=$ _____	

Guided Practice

In the diagram, $\overleftrightarrow{XY}$ is parallel to $\overleftrightarrow{PQ}$. Find the measures of $\angle 1$, $\angle 2$, and $\angle 3$.



$m\angle 1 =$ 125° — Corr. $\angle$s

$m\angle 1 + m\angle 3 =$ 180° — Supp. $\angle$s

125° $+ m\angle 3 =$ 180° — Substitute $m\angle 1 =$ 125°

$m\angle 3 +$ 125° $- 125° =$ 180° $- 125°$ — Subtract 125° from both sides.

$m\angle 3 =$ 55° — Simplify.

$m\angle 3 =$ $m\angle 2$ — Vert. $\angle$s

$=$ 55°

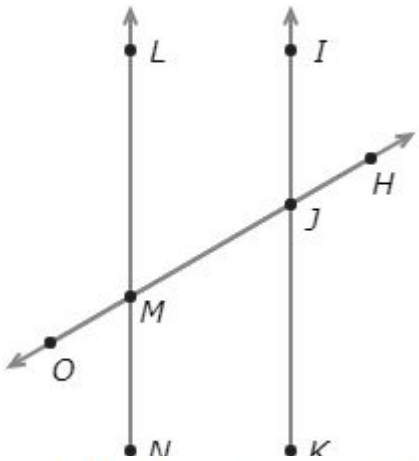
Practice:

Click the link below for additional practice on:

[Transversals of Parallel Lines:Find Angle Measures]

1. Apply what you have learned about angle relationships when parallel lines are cut by a transversal to complete the given practice problems.
2. Enter your answer in the given box.
3. Press submit for feedback to see how you are doing.

Look at this diagram:



If $\overleftrightarrow{IK}$ and $\overleftrightarrow{LN}$ are parallel lines and $m\angle LMJ = 60°$, what is $m\angle IJH$?

[ ]°

Click here to check your answer

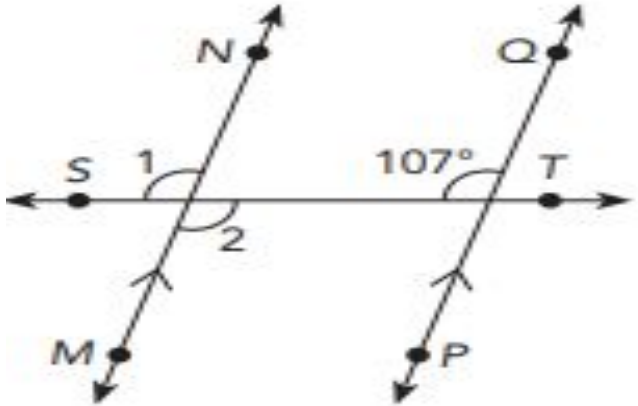
Submit

Independent Practice:

Work through the following examples on a seperate piece of paper.

Find the measure of each numbered angle.

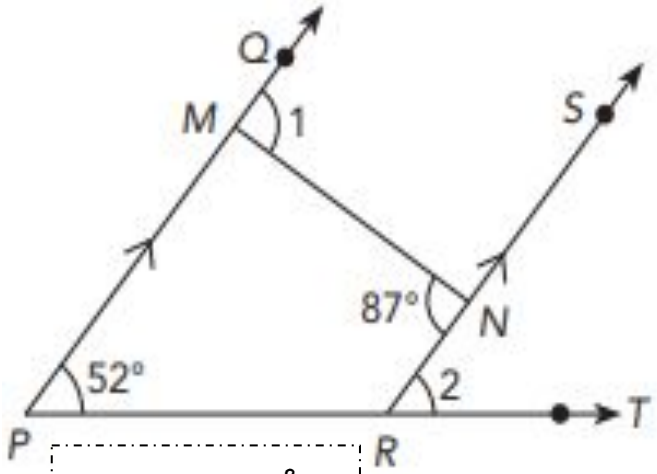
1. $\overleftrightarrow{MN}$ is parallel to $\overleftrightarrow{PQ}$.



m∠1=____°

m∠2=____°

2. $\overleftrightarrow{PQ}$ is parallel to $\overleftrightarrow{RS}$.



m∠1=____°

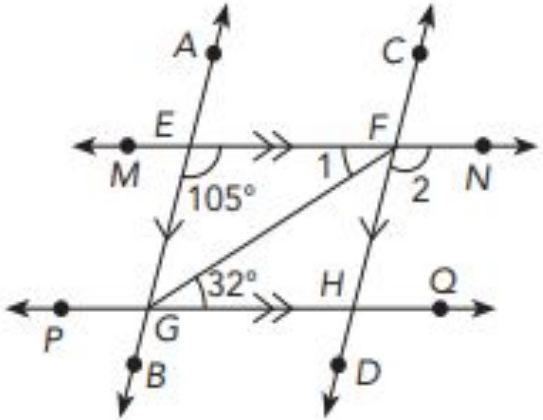
m∠2=____°

Independent Practice:

Work through the following examples on a seperate piece of paper.

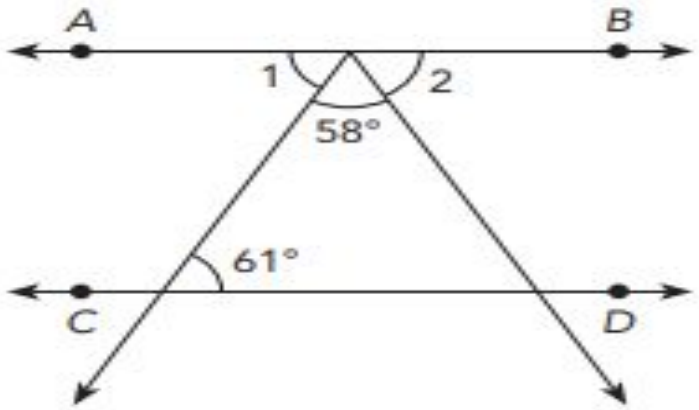
Find the measure of each numbered angle.

3. $\overleftrightarrow{AB}$ is parallel to $\overleftrightarrow{CD}$ and $\overleftrightarrow{MN}$ is parallel to $\overleftrightarrow{PQ}$.



m∠1=___°
m∠2=___°

4. $\overleftrightarrow{AB}$ is parallel to $\overleftrightarrow{CD}$



m∠1=___°
m∠2=___°

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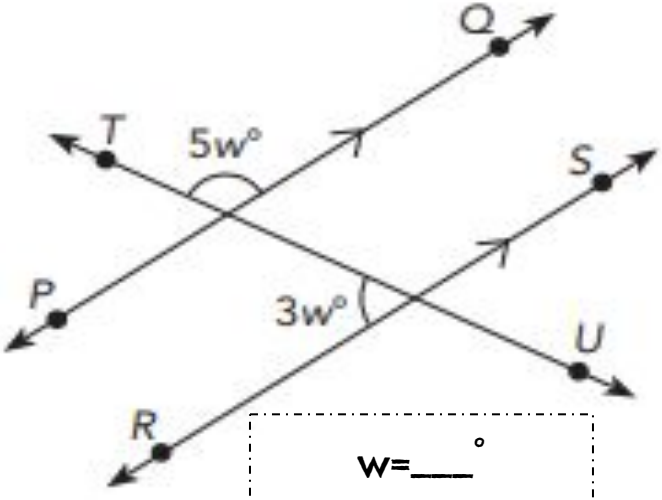
Independent Practice:

Work through the following examples on a seperate piece of paper.

Find the value of each variable.

5. $\overleftrightarrow{PQ}$ is parallel to $\overleftrightarrow{RS}$.

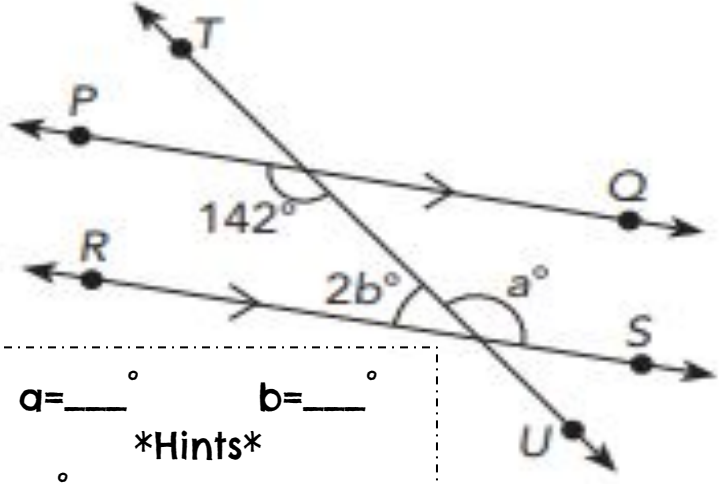


w=____°

Hint

$5w^\circ + 3w^\circ = 180^\circ$

6. $\overleftrightarrow{PQ}$ is parallel to $\overleftrightarrow{RS}$.



a=____° b=____°

Hints

a° is an alternate interior angle with 142°

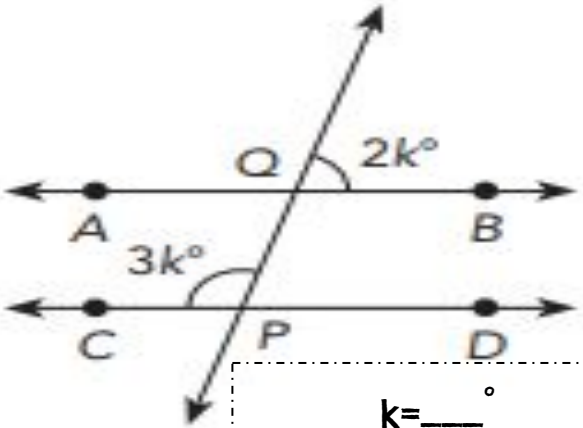
$2b^\circ + a^\circ = 180^\circ$

Independent Practice:

Work through the following examples on a seperate piece of paper.

Find the value of each variable.

7. $\overleftrightarrow{AB}$ is parallel to $\overleftrightarrow{CD}$



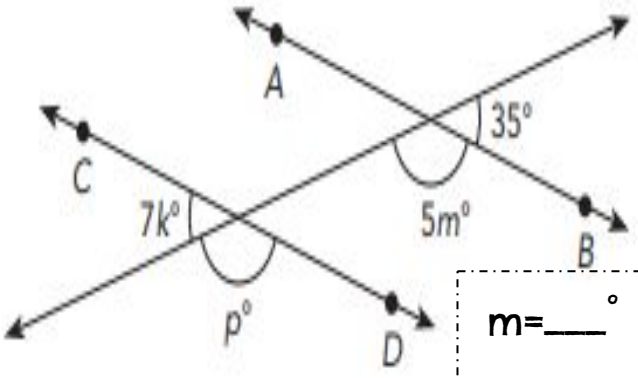
k=___°

Hints

m∠QPD=k°

3k°+2k°=180°

8. $\overleftrightarrow{AB}$ is parallel to $\overleftrightarrow{CD}$



m=___° p=___° k=___°

Hints

5m°+35°=180°

p°=5m°

7k°+p°=180°

Independent Practice Answer Key:

Once you have completed the problems, check your answers here.

Find the measure of each numbered angle.

1. $m\angle 1 = 107^\circ$
   $m\angle 2 = 107^\circ$

2. $m\angle 1 = 32^\circ$
   $m\angle 2 = 105^\circ$

3. $m\angle 1 = 87^\circ$
   $m\angle 2 = 52^\circ$

4. $m\angle 1 = 61^\circ$
   $61 + m\angle 2 + 58 = 180$

   $m\angle 2 + 119 = 180$
   $-119 \quad -119$
   $m\angle 2 = 61^\circ$

Independent Practice Answer Key:

Once you have completed the problems, check your answers here.

Find the value of each variable.

5.

$w = 22.5^\circ$

$5w^\circ + 3w^\circ = 180^\circ$

$\frac{8w^\circ}{8} = \frac{180^\circ}{8}$

$w = 22.5^\circ$

6.

$a = 142^\circ \qquad b = 19^\circ$

$2b^\circ + a^\circ = 180^\circ$

$2b^\circ + 142 = 180^\circ$

$-142 \quad -142$

$\frac{2b^\circ}{2} = \frac{38^\circ}{2}$

$b^\circ = 19^\circ$

Independent Practice Answer Key:

Once you have completed the problems, check your answers here.

Find the value of each variable.

7. AB is parallel to CD

$k=36^\circ$

$3k^\circ+2k^\circ=180^\circ$

$\frac{5k^\circ}{5}=\frac{180^\circ}{5}$

$k^\circ=36^\circ$

8. AB is parallel to CD

$m=29^\circ$ $p=145^\circ$ $k=5^\circ$

$5m^\circ+35^\circ=180^\circ$

$-35\ \ -35$

$\frac{5m^\circ}{5}=\frac{145^\circ}{5}$

$m^\circ=29^\circ$

$7k^\circ+p^\circ=180^\circ$

$7k^\circ+145^\circ=180^\circ$

$-145\ \ -145$

$\frac{7k^\circ}{7}=\frac{35^\circ}{7}$

$k=5^\circ$

$p^\circ=5m^\circ$

$p^\circ=5(29)$

$p^\circ=145^\circ$

Additional Practice:

Math is Fun: Parallel Lines and Pairs of Angles

Khan Academy-Angle Relationships with Parallel Lines

Khan Academy- Equation Practice with Angles

Math Games-Transversal of Parallel Lines

Math Planet-Quick Video Explanation