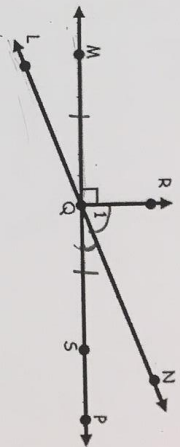


Station 1: Notation & Reading Diagrams

KEY

Use the diagram and given information to complete #1-9.

Given:  $Q$  is the midpoint of  $\overline{MS}$  and  $\angle RQN = \angle NQP$ .



1. Mark the diagram using the given information.
2. Name two congruent segments:  $\overline{MQ} \cong \overline{QS}$
3. Name an angle bisector:  $\overrightarrow{QN}$
4. Name two right angles:  $\angle MQR, \angle RQP$
5. Name a pair of vertical angles:  $\angle MQR, \angle NQP$
6. Name a segment bisector:  $\overline{QR}$
7. Name two complementary angles:  $\angle L & \angle NOS$
8. Name a pair of adjacent angles:  $\angle LQN, \angle MQR$
9. Name an angle that forms a linear pair with  $\angle MQL$ :  $\angle MQN$  or  $\angle LQS$

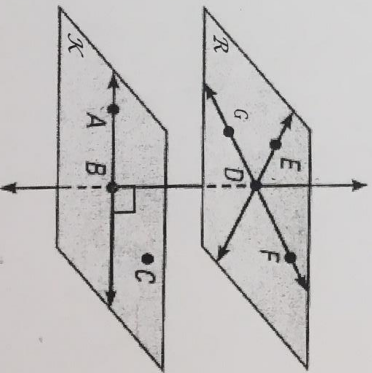
Use the diagram to the right to complete #10-16.

Determine whether the statement is true or false.

10. Points  $A, B$  and  $C$  are collinear. False
11.  $\overline{FD}$  and  $\overline{DF}$  are opposite rays. False
12.  $\overline{DE}$  lies on plane  $DEF$ . True
13.  $\overline{DB} \perp \overline{AB}$ . True

Complete the following using the diagram.

14. Give another name of Plane  $R$ . Plane  $EDG$
15. Name the intersection of  $\overline{BD}$  and Plane  $K$ .  $B$
16. Name a segment on  $\overline{FD}$ .  $\overline{GD}, \overline{FD}, \overline{GF}$



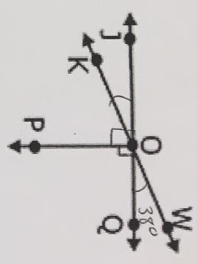
Station 2: Finding Missing Angles using Angle Relationships

KEY

1. Given  $m\angle W O Q = 38^\circ$ . Find  $m\angle J O K$  and  $m\angle K O P$ .

$m\angle J O K = \boxed{38^\circ}$

$m\angle K O P = 90 - 38 = \boxed{52^\circ}$



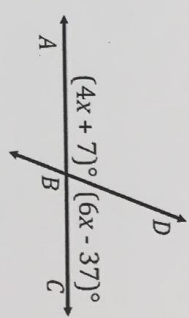
2. Use the diagram to find the value of  $x$ .

$4x + 7 + 6x - 37 = 180$

$10x - 30 = 180$

$10x = 210$

$\boxed{x = 21}$



3. The measure of an angle is four less than three times the measure of another angle. If the angles form a linear pair, find the measure of both angles.

Another  $\angle$ :  $x$

gn  $\angle$ :  $3x - 4$

$x + 3x - 4 = 180$

$4x - 4 = 180$

$4x = 184$

$x = 46$

$3(46) - 4 = 134$

Sum = 180

The angles measure  $46^\circ$  &  $134^\circ$

4. The measure of an angle is six more than two times the measure of its complement. Find the measure of the angle and its complement.

Complement:  $x$

gn  $\angle$ :  $2x + 6$

$x + 2x + 6 = 90$

$3x + 6 = 90$

$3x = 84$

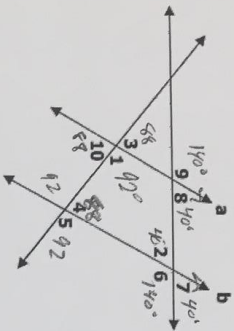
$x = 28$

$2(28) + 6 = 62$

The angle measures  $62^\circ$  & its complement measures  $28^\circ$

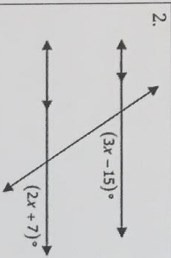
Station 3: Finding Missing Values with Parallel Lines cut by Transversals

1. Given  $a \parallel b$ ,  $m\angle 1 = 92^\circ$  and  $m\angle 2 = 40^\circ$ , find the measure of all other angles numbered in diagram.



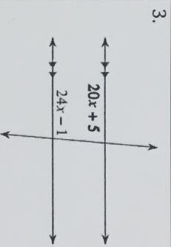
- $m\angle 3 = 88^\circ$
- $m\angle 4 = 88^\circ$
- $m\angle 5 = 92^\circ$
- $m\angle 6 = 140^\circ$
- $m\angle 7 = 40^\circ$
- $m\angle 8 = 40^\circ$
- $m\angle 9 = 88^\circ$
- $m\angle 10 = 88^\circ$
- $m\angle 11 = 140^\circ$
- $m\angle 12 = 140^\circ$

For #2-3, find the value of each variable in the diagram. Then state the theorem/postulate you used in if-then form.



$3x - 15 = 2x + 7$   
 $x = 22$

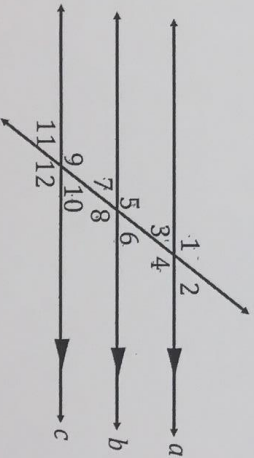
If 2 parallel lines cut by transversal, then corresponding angles are congruent.



$20x + 5 + 24x - 1 = 180$   
 $44x + 4 = 180$   
 $44x = 176$   
 $x = 4$

If 2 parallel lines cut by transversal, then consecutive interior angles are supplementary.

4. Use the following diagram to determine which statements are true. Select all that apply.



- $\angle 1 \cong \angle 4$
- $\angle 1 \cong \angle 12$
- $\angle 6 \cong \angle 11$
- $\angle 10 \cong \angle 3$
- $\angle 1 \cong \angle 6$
- $\angle 4 \cong \angle 5$
- $\angle 1 \cong \angle 3$
- $\angle 3 \cong \angle 4$
- $\angle 3 \cong \angle 6$
- $\angle 3 \cong \angle 8$
- $\angle 3 \cong \angle 11$
- $\angle 3 \cong \angle 12$

Station 4: Parallel & Perpendicular Lines

KEY

- If  $r \perp s$  and  $s$  has a slope of  $\frac{3}{4}$ , what is the slope of  $r$ ?  $-\frac{4}{3}$
- If  $a \parallel b$  and  $a$  has a slope of  $-2$ , what is the slope of  $b$ ?  $-2$
- Determine if each pair of lines is parallel, perpendicular or neither.

<p>A.</p> $y = 2x - 7$ $3x + 6y = 12$ $6y = -3x + 12$ $y = -\frac{1}{2}x + 2$ <p style="text-align: center;">⊥</p>	<p>B.</p> $y = \frac{1}{3}x + 6$ $y = 3x - 1$ <p style="text-align: center;">neither</p>	<p>C.</p> <p><math>\overline{AB}</math> with <math>A(5, 10)</math> and <math>B(2, 4)</math></p> <p><math>\overline{CD}</math> with <math>C(4, 8)</math> and <math>D(3, 6)</math></p> $\frac{10-4}{5-2} = \frac{6}{3} = 2$ $\left\{ \begin{array}{l} \frac{8-6}{4-3} = \frac{2}{1} = 2 \end{array} \right.$ <p style="text-align: center;">∥</p>
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Write the equation of each line in slope-intercept form using the given information.

- A line perpendicular to  $y = \frac{2}{3}x + 1$  that passes through  $(-4, 5)$   $\perp m = -\frac{3}{2}$

$$y - 5 = -\frac{3}{2}(x + 4)$$

$$y - 5 = -\frac{3}{2}x - 6$$

$$y = -\frac{3}{2}x - 1$$

- A line parallel to  $y = -4x - 9$  and passes through  $(2, -3)$   $\parallel m = -4$

$$y + 3 = -4(x - 2)$$

$$y + 3 = -4x + 8$$

$$y = -4x + 5$$

- A line parallel to  $y = -6$  and passes through  $(0, 5)$  horizontal line

$$y = 5$$