## MATH 7 Accelerated: Week of April 20

- Go through the slides (notes) and work through the examples on a separate piece of paper.
- Do the given practice problems (again, on a separate piece of paper).
- Check your answers with the key given (last slide).
- If you have questions or would like feedback on your work, submit a photo/scan of it to google docs or return your work to the school Monday.
- If you do not have questions/need feedback, click on the "mark as complete" button on Google Docs.
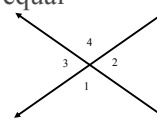- Check your school email/google calendar for online help sessions via Zoom.

Day 1: Slides 2-5
Day 2: Slides 6-10
Day 3: Slide 11-15
Day 4: Slide 16-17
Answers on Slide 18

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Day 1
## L4: Vertical Angles & Linear Pairs

### Vocabulary

Vertical Angles: Nonadjacent angles formed by two intersecting lines. Vertical angles are equal in measure.

*∠1 & ∠4 are vertical angles.*

Linear Pair: Two adjacent angles whose non-common sides are opposite rays. If two angles form a linear pair, they are supplementary angles.
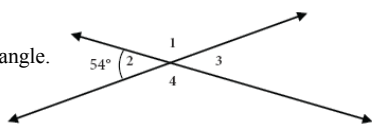
*∠1 & ∠2 are a linear pair.*

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## Example 1

Find the measure of each missing angle.

54°

a. $m\angle 3$

▸ Vertical angles are congruent.

$m\angle 2 = m\angle 3$
$54° = m\angle 3$

b. $m\angle 1$

▸ $m\angle 1$ and $m\angle 2$ are a linear pair.
▸ Substitute known values.
▸ Subtract 54 from each side.

$m\angle 1 + m\angle 2 = 180$
$m\angle 1 + 54 = 180$
$\underline{-54 \quad -54}$
$m\angle 1 = 126°$

c. $m\angle 4$

▸ Vertical angles are congruent.
▸

$m\angle 1 = m\angle 4$
$126° = m\angle 4$

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## Example 2

$(3x + 7)°$

$(x + 30)°$

Use the diagram to the right.
a. Solve for $x$.
b. Find the measure of each angle.
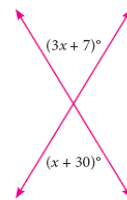
a. Vertical angles have equal measures.
  Subtract $x$ from each side.

$3x + 7 = x + 30$
$\underline{-x \qquad -x}$
$2x + 7 = 30$

  Subtract 7 from each side.

$\underline{-7 \quad -7}$
$2x = 23$

  Divide by 2 on each side.

$\frac{2x}{2} = \frac{23}{2}$
$x = 11.5$

b. Substitute the solution for $x$ in each angle expression.
$(3x + 7) = (3(11.5) + 7) = (34.5 + 7) = 41.5°$
$(x + 30) = (11.5 + 30) = 41.5°$
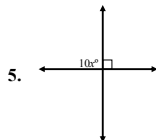The measure of each angle is 41.5°.

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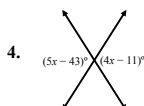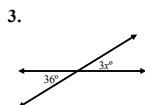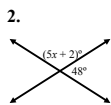## L4 Practice Problems:

1. Determine the measure of each unknown angle using the diagram below.

106°

a) $m\angle 2 = $ _____

b) $m\angle 3 = $ _____
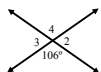
c) $m\angle 4 = $ _____

**Identify each identified angle pair as vertical angles or a linear pair. Solve for $x$.**

2.

$(5x + 2)°$
48°

3.

36°      $3x°$

4.

$(5x - 43)°$  $(4x - 11)°$

5.

$10x°$

END DAY 1

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Day 2
## L5: Alternate Exterior and Interior Angles
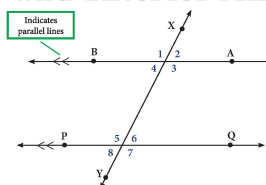
Indicates parallel lines

### Vocabulary

**Transversal:** A line that intersects two or more lines in the same plane.

$\overleftrightarrow{XY}$ *is a transversal*

**Alternate Exterior Angles:** Two angles on the outside of two lines and on opposite sides of a transversal.

*∠1 & ∠7 are alternate exterior angles.*

**Alternate Interior Angles:** Two angles on the inside of two lines and on opposite sides of a transversal.

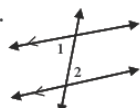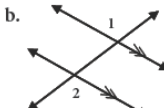*∠4 & ∠6 are alternate interior angles.*

## Example 1

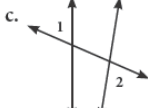If two parallel lines are intersected by a transversal, then the alternate interior angles are congruent.

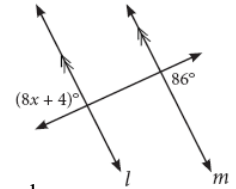If two parallel lines are intersected by a transversal, then alternate exterior angles are congruent.

Name the angle relationship between $\angle 1$ and $\angle 2$.
Determine whether $\angle 1$ and $\angle 2$ are congruent.

a.

b.

c.

Alternate Interior
Congruent – lines are parallel

Alternate Exterior
Congruent – lines are parallel

Alternate Exterior
Not Congruent – lines are not parallel
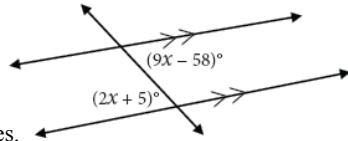
## Example 2

Identify the special angle pair relationship. Solve for $x$.

▸ The angles are alternate exterior angles.

▸ Lines $l$ and $m$ area parallel so the alternate exterior angles are congruent.

▸

▸ Subtract 4 from each side.

▸

▸ Divide by 8 on each side.

▸

$$8x + 4 = 86$$
$$-4 \quad -4$$
$$\frac{8x}{8} = \frac{82}{8}$$
$$x = 10.25$$

## Example 3

Use the figure. Solve for $x$ and find the measure of the angles.

$(9x - 58)°$

$(2x + 5)°$

▸ The lines are parallel so alternate interior angles are congruent.

▸ Subtract $2x$ from each side.

▸ Add 58 to each side.

▸ Divide by 7 on each side.

$$9x - 58 = 2x + 5$$
$$-2x \qquad -2x$$
$$7x - 58 = 5$$
$$+58 \quad +58$$
$$\frac{7x}{7} = \frac{63}{7}$$
$$x = 9$$

▸ Write the given expression for each angle then substitute 9 for $x$.

▸ $(2x + 5) = (2(9) + 5) = (18 + 5) = 23°$

▸ $(9x - 58) = (9(9) - 58) = (81 - 58) = 23°$

## L5 Practice Problems:

**Name the special angle pair relationship.**
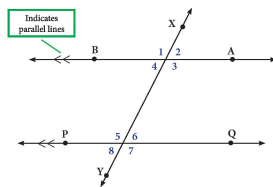
6.

7.

**Name the special angle pair relationship. Solve for $x$.**

8.

$38°$
$(8 + 5x)°$

9.

$(2x - 7)°$
$123°$

10.

$(6x - 11)°$
$5x°$
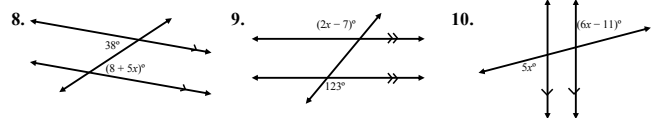
END DAY 2

## Day 3  L6: Corresponding and Same-Side Interior Angles

### Vocabulary

Indicates parallel lines

Corresponding Angles: Two non-adjacent angles that are on the same side of a transversal with ne angle is outside the two lines and the other angle is inside.
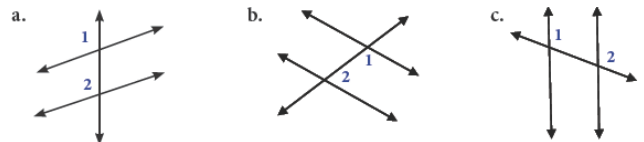
$\angle 1$ & $\angle 5$ *are corresponding angles.*

Same-Side Interior Angles: Two angles that are on the inside of two lines and are on the same side of the transversal.

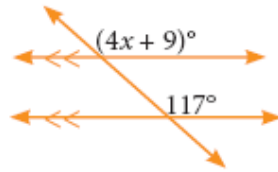$\angle 3$ & $\angle 6$ *are same-side interior angles.*

## Example 1

Name the special angle pair relationship between $\angle 1$ and $\angle 2$.

a.

b.

c.

a.  corresponding angles
b.  same-side interior angles
c.  corresponding angles

## Example 2

Write an equation and solve for $x$.



Corresponding angles have equal measures.
$$4x + 9 = 117$$
Subtract 9 from each side.
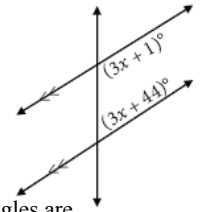$$\begin{array}{r} -9 \quad -9 \\ \hline 4x = 108 \end{array}$$
Divide by 4 on each side.
$$\frac{4x}{4} = \frac{108}{4}$$
$$x = 27$$
Check the solution by substituting 27 for $x$ in the equation.
$$4(27) + 9 = 117$$
$$108 + 9 = 117$$
$$117 = 117 ✔$$

## Example 3

Write an equation and solve for $x$.
Then find the measure of each identified angle.



The lines are parallel so the same-side interior angles are supplementary.
$$(3x + 1) + (3x + 44) = 180$$
Combine like terms.
$$6x + 45 = 180$$
Subtract 45 from each side.
$$\begin{array}{r} -45 \quad -45 \\ \hline 6x = 135 \end{array}$$
Divide by 6 on each side.
$$\frac{6x}{6} = \frac{135}{6}$$
$$x = 22.5$$
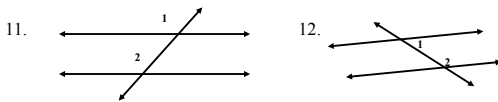
Find the measure of each angle by substituting 22.5 for $x$.
$$(3x + 1) = (3(22.5) + 1) = (67.5 + 1) = 68.5°$$
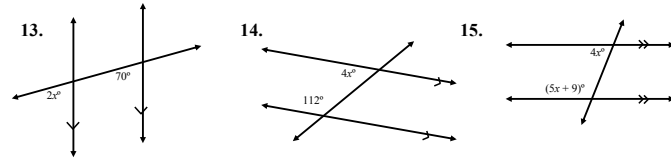$$(3x + 44) = (3(22.5) + 44) = (67.5 + 44) = 111.5°$$

$$68.5 + 111.5 = 180 ✔$$

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## L6 Practice Problems:

**Name the special angle pair relationship.**

11.


12.


**Name the special angle pair relationship. Solve for $x$.**
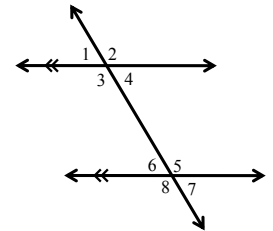
13.


14.


15.


END DAY 3

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Day 4

## Angles of Two Parallel Lines Intersected by a Transversal

▸ Alternate exterior angles are congruent.
- $\angle 1 \cong \angle 7$
- $\angle 2 \cong \angle 8$

▸ Alternate interior angles are congruent.
- $\angle 4 \cong \angle 6$
- $\angle 3 \cong \angle 5$

▸ Corresponding angles are congruent.
- $\angle 1 \cong \angle 6$
- $\angle 2 \cong \angle 5$
- $\angle 3 \cong \angle 8$
- $\angle 4 \cong \angle 7$

▸ Same-Side interior angles are supplementary.
- $m\angle 4 + m\angle 5 = 180°$
- $m\angle 3 + m\angle 6 = 180°$



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## L4-6 Practice Problems:

Name the special angle pair relationship. Solve for $x$. Then find the measure of each identified angle.

16.


17.


18.


19.


20.


21.
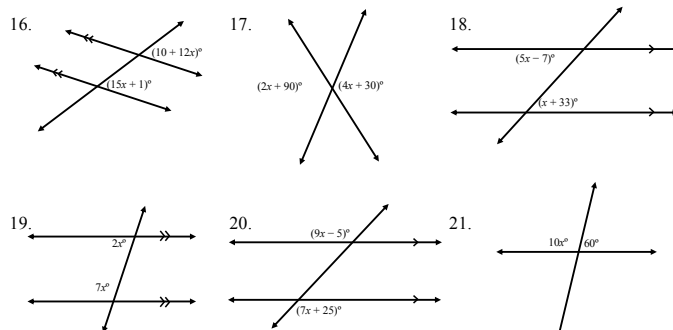

END DAY 4

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## Practice Problems: ANSWER PAGE

Day 4:
16. Corresponding; x = 3; $46^0$
17. Vertical Angles; x = 30; $150^0$
18. Alternate interior; x = 10; $43^0$
19. Same-side interior; x = 20; $40^0$ & $140^0$
20. Alternate Exterior; x = 15; $130^0$
21. Linear Pair; x = 12; $120^0$

Day 2:
6. Alternate Exterior
7. Alternate Interior
8. Alternate Interior; $x = 6$
9. Alternate Exterior; $x = 65$
10. Alternate Exterior; $x = 11$

Day 3:
11. Corresponding
12. Same-side interior
13. Corresponding, $x = 35$
14. Same-side interior; $x = 17$
15. Same-side interior; $x = 19$

Day 1:
1. a)$74^0$ b)$74^0$ c)$106^0$
2. Linear Pair; $x = 26$
3. Vertical angles; $x = 12$
4. Vertical angles; $x = 32$
5. Linear pair; $x = 9$

*MATH 7A: LAST SLIDE for this week!*