

August 20, 2018

Draw a supplementary angle  
 Draw a complementary angle  
 What do supplementary angles = ?  
 What do a complementary angles = ?

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Classify each angle as acute, obtuse, right, or straight.

1) obtuse  
 2) right  
 3) obtuse  
 4) straight  
 5) acute  
 6) acute

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Name each angle in four ways.

7)  $\angle EDC$   
 $\angle CDE$   
 $\angle D$   
 $\angle 5$

8)  $\angle HGF$   
 $\angle FGH$   
 $\angle G$   
 $\angle 1$

9)  $\angle HGF$   
 $\angle FGH$   
 $\angle G$   
 $\angle 1$

10)  $\angle JKL$   
 $\angle LKJ$   
 $\angle K$   
 $\angle 5$

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Use the angle addition postulate to find the missing measurements.

11)  $m\angle HUI = 152^\circ$  and  $m\angle HIF = 60^\circ$ . Find  $m\angle FIJ$ .  
 $\angle HIF + \angle FIJ = \angle HUI$   
 $60^\circ + x = 152^\circ$   
 $-60^\circ$   
 $x = 92^\circ$

12)  $m\angle QRS = 135^\circ$  and  $m\angle QRH = 74^\circ$ . Find  $m\angle HRS$ .  
 $\angle SRH + \angle HRQ = \angle SRQ$   
 $x + 74 = 135$   
 $-74$   
 $x = 61$

13) Find  $m\angle CDK$  if  $m\angle KDE = 160^\circ$  and  $m\angle CDE = 180^\circ$ .  
 $\angle CDK + \angle KDE = \angle CDE$   
 $x + 160 = 180$   
 $-160$   
 $x = 20$

14)  $m\angle JKL = 107^\circ$  and  $m\angle MKL = 85^\circ$ . Find  $m\angle JKM$ .  
 $\angle LKM + \angle MKJ = \angle LKJ$   
 $85 + x = 107$   
 $-85$   
 $x = 22$   
 $\angle MKJ = 22$

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15)  $m\angle FGZ = 52^\circ$  and  $m\angle ZGH = 94^\circ$ . Find  $m\angle FGH$ .  
 $\angle FGZ + \angle ZGH = \angle FGH$   
 $52 + 94 = x$   
 $146 = \angle FGH$

16) Find  $m\angle JIH$  if  $m\angle JIG = 70^\circ$  and  $m\angle GIH = 52^\circ$ .  
 $\angle JIG + \angle GIH = \angle JIH$   
 $70 + 52 = \angle JIH$   
 $122 = \angle JIH$

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Name the relationship: complementary, linear pair, vertical, or adjacent.

17) linear pair

18) adjacent/linear pair ✓

19) complementary

20) vertical

21) adjacent

22) complementary

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Using vertical pairs, find the measure of angle b.

23) vertical angle  
 $b = 73$

24)  $b = 52^\circ$

25)  $b = 59^\circ$

26)  $b = 35^\circ$

27) Complementary  
 $b + 64 = 90$   
 $-64 -64$   
 $b = 26$

28) Complementary  
 $b + 35 = 90$   
 $b = 55$

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Using complementary angles, find the value of x.

29)  $5x + 2 + 23 = 180$   
 $5x + 25 = 180$   
 $-25 -25$   
 $5x = 155$   
 $x = 31$

30) Complementary like terms  
 $x - 9 + 66 = 90$   
 $x + 57 = 90$   
 $-57 -57$   
 $x = 33$

31) line 180°  
 $x - 3 + 2x = 180$   
 $3x - 3 = 180$   
 $+3 +3$   
 $3x = 183$   
 $x = 61$

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Using linear pairs, find the measure of angle b.

32)  $\hat{=} 180$   
 $b + 123 = 180$   
 $-123 -123$   
 $b = 57$

33)  $b + 61 = 180$   
 $-61 -61$   
 $b = 119$

34)  $b + 48 = 180$   
 $-48 -48$   
 $b = 132$

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Find the value of x.

35)  $4x + 3 + 77 = 180$   
 $4x + 80 = 180$   
 $-80 -80$   
 $4x = 100$   
 $x = 25$

36)  $2x + 9 + 3x + 1 = 180$   
 $5x + 10 = 180$   
 $-10 -10$   
 $5x = 170$   
 $x = 34$

37)  $x + 18 + 6x + 1 = 180$   
 $7x + 19 = 180$   
 $-19 -19$   
 $7x = 161$   
 $x = 23$

80, 34, 23, 18

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Complementary Angles: Find the measure of angle b.

38)  $b + 67 = 90$   
 $b = 23$

39)  $36 + b = 90$   
 $b = 54$

40)  $63 + b = 90$   
 $b = 27$

41)  $41 + b = 90$   
 $b = 49$

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Supplementary Angles: Find the measure of angle b.

42)  $130 + b = 180$   
 $b = 50$

43)  $b + 29 = 180$   
 $b = 151$

44)  $138 + b = 180$   
 $b = 42$

45)  $b + 92 = 180$   
 $b = 88$

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August 21, 2018  
 Use tech:  
 What is a transversal in mathematics?  
 Draw a picture.

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Draw two parallel line & a transversal

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The angle relationships when parallel lines are cut by a transversal are

- Alternate Interior Angles**  
 alternate sides of the transversal and interior of the parallels
- Same Side Interior Angles**  
 Same side of the transversal and interior of the parallels
- Alternate Exterior Angles**  
 alternate sides of the transversal and exterior of the parallels
- Same Side Exterior Angles**  
 Same side of the transversal and exterior of the parallels

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Write the angle relationship for each pair of angles.

Vocabulary:  
 Alternate Interior Angles  
 Alternate Exterior Angles  
 Corresponding Angles  
 Complementary Angles  
 Supplementary Angles  
 Vertical Angles

Answers:  
 1 and 2 are alternate exterior angles  
 1 and 3 are alternate interior angles  
 1 and 4 are corresponding angles  
 2 and 5 are alternate exterior angles  
 2 and 6 are alternate interior angles  
 2 and 7 are corresponding angles  
 3 and 4 are vertical angles  
 3 and 5 are alternate exterior angles  
 3 and 6 are alternate interior angles  
 3 and 7 are corresponding angles  
 4 and 5 are vertical angles  
 4 and 6 are alternate exterior angles  
 4 and 7 are alternate interior angles  
 5 and 6 are vertical angles  
 5 and 7 are alternate exterior angles

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transversal practice  
 Parallel lines, transversal & angle relationships Date: \_\_\_\_\_ Perio: \_\_\_\_\_

Find the measure of each angle indicated.

1)  $50^\circ$  same side interior  
 $? + 130^\circ = 180^\circ$   
 $130^\circ - 130^\circ = 50^\circ$   
 $? = 50^\circ$

2)  $30^\circ$  alternate exterior  
 $? = 110^\circ$

3) side same interior  
 $? + 87^\circ = 180^\circ$   
 $180^\circ - 87^\circ = 93^\circ$   
 $? = 93^\circ$

Solve for x.

4) vertical LS  
 $-4x + 8x = 12 + 6x$   
 $4x = 12 + 6x$   
 $-4x - 6x = 12$   
 $-10x = 12$   
 $x = -1.2$

5) alternate interior LS  
 $110 = 8 + 17x$   
 $102 = 17x$   
 $17 \quad 17$   
 $6 = x$

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6) Corresponding angles  
 $7x + 8 = 9x - 4$   
 $-7x = -4x$   
 $8 = 2x - 4$   
 $+4 \quad +4$   
 $12 = 2x$   
 $6 = x$

7) Find the measure of the angle indicated in bold  
 vertical LS  
 $11x + 2 = 12x - 6$   
 $-11x = -12x - 6$   
 $+11x \quad +11x$   
 $2 = -x - 6$   
 $+6 \quad +6$   
 $8 = -x$   
 $x = -8$

8) alternate exterior LS  
 $20x = 19x + 5$   
 $-19x \quad -19x$   
 $x = 5$   
 $20x = 20(5) = 100$

9) alternate interior LS  
 $? = 135^\circ$   
 corresponding LS  
 $? = 97^\circ$

Find the value of x that makes lines u and v parallel.

11) alternate exterior LS  
 $7x + 8 = 8x + 2$   
 $-7x = -8x + 2$   
 $+8x \quad +8x$   
 $x = 2$

12) alternate interior LS  
 $110 = 10x + 10$   
 $-10 \quad -10$   
 $100 = 10x$   
 $10 \quad 10$   
 $10 = x$

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August 22, 2018

Solve for ALL angles on the parallel lines and the transversal, given that  $\angle 4 = 5x + 35$  and  $\angle 7 = 45$

$180 = 45 + 5x + 35$   
 $180 = 80 + 5x$   
 $-80 -80$   
 $100 = 5x$   
 $20 = x$   
 $5(20) + 35$

What is the value for x and what is the measure of the top right angle?

$2x + 20 = 3x - 10$   
 $-3x -3x$   
 $-1x + 20 = -10$   
 $-20 -20$   
 $-1x = -30$   
 $x = 30$

$2(30) + 20 = 80$   
 $60 + 20 = 80$

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study guide

Unit 2 > C.1

Parallel Lines Cut by a Transversal

Given: Lines AB and CD are parallel. Another line EF cuts across the two parallel lines.

- The angles that are on opposite sides of a transversal, inside the parallel lines are called **alternate interior angles** and would be congruent.
- The angles that are on the same side of a transversal and in the same location are called **corresponding angles** and are congruent.

3) Solve for x and y, then find angle A.

4) Find the measure of the alternate exterior angles in the diagram below.

5) Find the value of x.

6) Find the value of x.

Properties of Angles

- If two angles add to 90 degrees, they are called **complementary**.
- Two adjacent angles who's sum add to 180 degrees are called a **linear pair**.
- When two lines intersect, there are two pairs of opposite angles that are called **vertical** angles.

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18) The measure of angle A is 20. Find the measure of angle B.

$\angle B + 45 = 90$   
 $-45 -45$   
 $\angle B = 45$

19) The measure of an angle is 135. Find the measure of the other angle.

$\angle E + 135 = 180$   
 $-135 -135$   
 $\angle E = 45$

12) In the diagram below,  $\angle 1$  and  $\angle 2$  are a linear pair. The  $m\angle 1 = x$  and  $m\angle 2 = 3x - 1$ . Find the measure of each angle.

$2x + 3x = 180$   
 $5x = 180$   
 $x = 36$

13)  $\angle 1$  and  $\angle 2$  are vertical angles.

14)  $\angle 2$  and  $\angle 3$  are vertical angles.

15)  $\angle 1$  and  $\angle 7$  are vertical angles.

16) Points P, Q, R, and S are on a line in that order. Find the measure of each angle.

$x + 90 + x = 180$   
 $2x + 90 = 180$   
 $-90 -90$   
 $2x = 90$   
 $x = 45$

$90 + 45 = 135$

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August 23, 2018

Quick review....

Vertical angles are **equal**

Corresponding angles are **equal**

Complementary angles are  **$= 90^\circ$**

Supplementary angles are  **$= 180^\circ$**

Same side interior angles are  **$= 180^\circ$**

Alternate interior angles are **equal**

Same side exterior angles are  **$= 180^\circ$**

Alternate exterior angles are **equal**

INTECTOR

quiz

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After the quiz....access the website [www.mrscolelovesmathematics.weebly.com](http://www.mrscolelovesmathematics.weebly.com)

Unit 2 - Similarity, Congruence, & Proofs

UNIT 2: SIMILARITY, CONGRUENCE, AND PROOFS

Unit 2: Building on standards from Unit 1 and from middle school, students will use transformations and proportional reasoning to develop a formal understanding of similarity and congruence. Students will identify criteria for similarity and congruence of angles, develop fluency with geometric proofs (formal, informal), and use the concepts of similarity and congruence to prove theorems involving lines, angles, triangles, and other polygons.

The following will take you to activities that will provide a better understanding of materials in unit 2.

- Geometry, Exploring parallel lines cut by a transversal
- Geometry, angle addition postulate
- Geometry, vertical angle theorem
- Geometry, interior angle sum

Practice for unit 2 materials:

- Quick, practice your tessellate triangle vocabulary
- 01, try your skills at triangle congruence
- 01, practice your angle naming skills
- 01, angle classification
- Mathbits, practice your angle geometry with this quiz

Find a minimum of 2 from the 'top' to explore. Write at least 1 sentence each about what you learned.

Find a minimum of 2 from the 'bottom' to explore. Write at least 1 sentence each about what you learned.

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Congruent triangles p 194

Your Turn

Determine whether the given triangles are congruent. Explain your reasoning.

4.

5.

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**Example 2** Find the value of the variable that results in congruent triangles.

**Step 1** Identify corresponding angles.

$\angle M$  corresponds to  $\angle J$ , because they have the same measure and they are formed by congruent corresponding sides. Similarly,  $\angle N$  corresponds to  $\angle K$ . So,  $\angle P$  corresponds to  $\angle L$ .

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**Evaluate: Homework and Practice**

1. Describe a sequence of rigid motions that maps  $\triangle MNP$  onto  $\triangle MQR$  to show that  $\triangle MNP \cong \triangle MQR$ .

For 2-5, determine whether the given triangles are congruent. Explain your reasoning.

2.

3.

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4.

5.

Find the value of the variable that results in congruent triangles.

6.

7.

8.

9.

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Geogebra, interior triangle sum

Be ready to share what you noticed....

Try these!

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The Isosceles Triangle!

p 283, define  
 isosceles triangle  
 legs  
 vertex angle  
 base  
 base angle

Be ready to label your vocabulary on this isosceles triangle!

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The equilateral triangle

p 286 copy in your notebooks:  
Equilateral Triangle Theorem  
&  
Converse of the Equilateral Triangle Theorem

Be ready to explain the markings on this triangle!

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p289 - let's practice

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Triangle Congruence..

What does congruence mean?

**The Rules**

p 203 copy ASA Triangle Congruence Theorem  
p 222 copy SSS Triangle Congruence Theorem  
p 227 copy AAS Triangle Congruence Theorem  
p 256 copy HL Triangle Congruence Theorem

**The Practice**

p 206 #3-7  
p 227 #4-11  
p 250 #1-6  
p 258 #1-5

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State if the two triangles are congruent. If they are, state how you know.

- 1)
- 2)
- 3)
- 4)
- 5)
- 6)
- 7)
- 8)
- 9)
- 10)

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