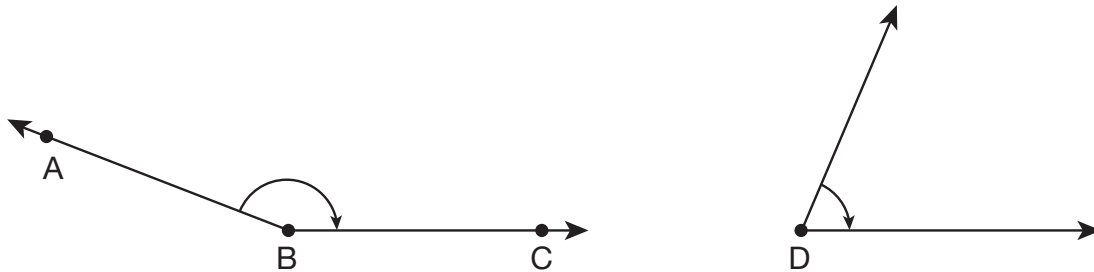# Practice with Angles and Lines

Angles

✔ Self–Check: Questions 1–2

1. Estimate the size of these angles using the benchmarks 0º, 90º, and 180º. Write your estimate near the angle.


2. Grace drew an angle of 75º.

A. What kind of angle did Grace draw? _____

B. If she draws an angle that is exactly 15° larger, what kind of angle is it?

C. She wants to draw an obtuse angle. Her obtuse angle will have to be at least how many degrees larger than her first angle?

Use the Self-Check Questions and the menu to choose practice

Workshop Menu			
Can I Do This?	**▲ Working On It!** I could use some extra help. *Jacob*	**● Getting It!** I just need some more practice. *Ana*	**■ Got It!** I'm ready for a challenge. *Nicholas*
Estimate the size of an angle using benchmarks: 90º, 180º, and 360º. Know the difference between acute, obtuse, and right angles.	**Questions 3–6**	**Questions 5–8**	**Questions 7–8**

▲ ☐ ☐ **3.** Estimate the size of the angles below using the benchmarks 0°, 90°, and 180°. For example, say "a little larger than 90°," or "very close to 90°," or estimate in degrees, such as 100°.

0°   90°   180°
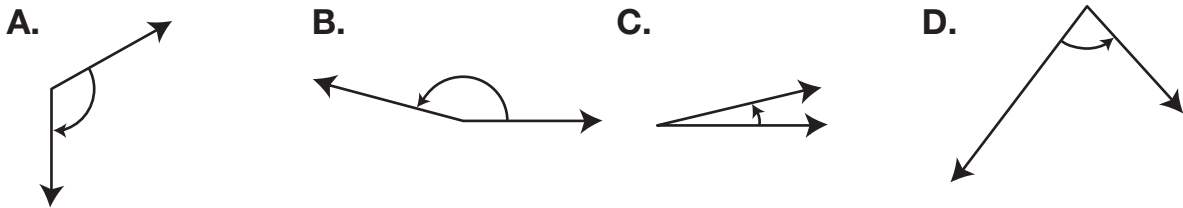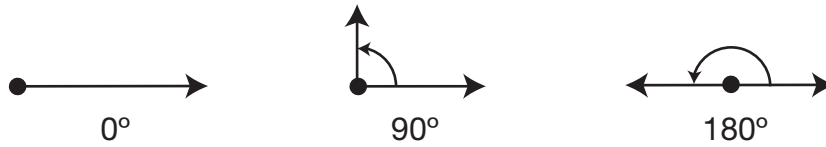
A.   B.   C.   D.

A. _____   B. _____

C. _____   D. _____

▲ ☐ ☐ **4.** Label each angle in Question 3 as acute, right, or obtuse.

acute   less than 90 °

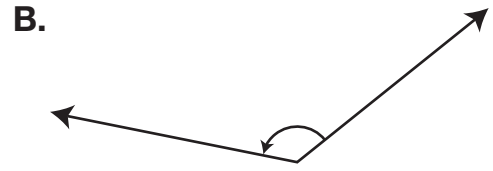**obtuse**   more than 90° but less than 180°

right   90°

▲ ● ☐ **5.** Without measuring, identify these angles as acute, right, or obtuse.

A.   B.   C.   D.
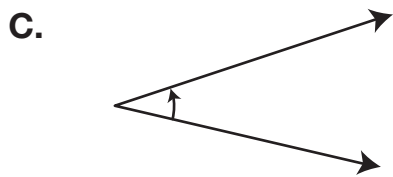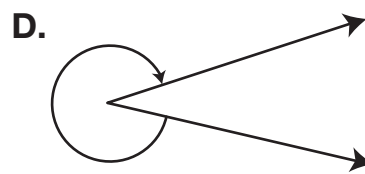
_____ _____ _____ _____
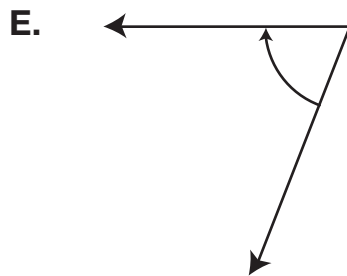
Choose one and explain how you decided.

▲●□ **6.** Estimate the sizes of the angles below. Give your answers in degrees, for example, 30° or 90°. You may use a square corner to help you, but not a protractor.
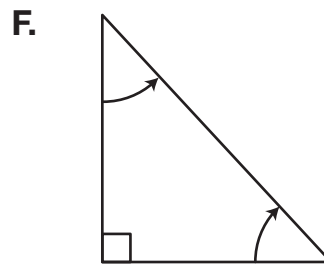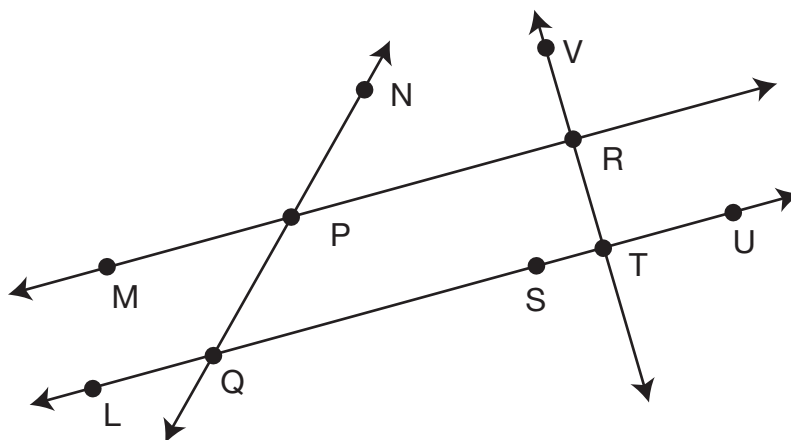
A.

_____

B.

_____

C.

_____

D.

_____

E.

_____

F.

_____
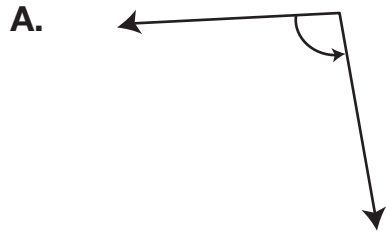
Use the figure below for Questions 7 and 8.

7. **A.** Identify two acute angles. Write the angle names using three letters, such as ∠ABC.

_____   _____

B. Name two obtuse angles.

_____   _____

C. Name a right angle. _____

8. Use the benchmarks 0°, 90°, and 180° to estimate the size of the following angles.
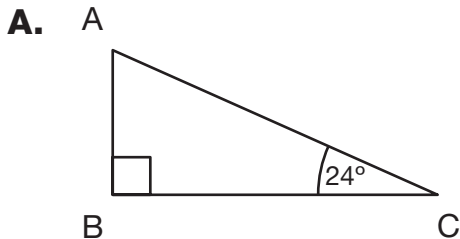
∠MPQ is _____

∠RPQ is _____

∠RTU is _____

Add and Subtract Angles
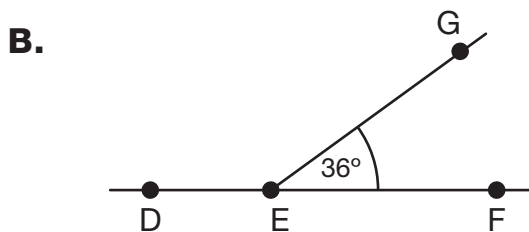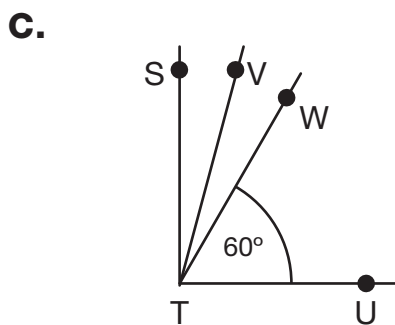
✓ Self-Check: Question 9

9. Without using a protractor, find the missing angle measures.

A.

∠A = _____

B.

∠DEG = _____

C.

∠STV = 90°

∠STV = ∠VTW

∠STV = _____

∠STW = _____

Use the Self-Check Question and menu to choose practice.

Workshop Menu			
Can I Do This?	▲ **Working On It!** I could use some extra help. _Jacob_	● **Getting It!** I just need some more practice. _Ana_	■ **Got It!** I'm ready for a challenge. _Nicholas_
Add and subtract angle measures.	**Questions 10–11, 13, 15**	**Questions 11–14, 16**	**Questions 12–14, 17**

▲☐☐ 10. Use a protractor to measure the angles.

    A. ∠ABC = _____

    B. ∠CBD = _____

    C. ∠ABD = _____

    D. Is this statement true? Explain.

        ∠ABC + ∠CBD = ∠ABD
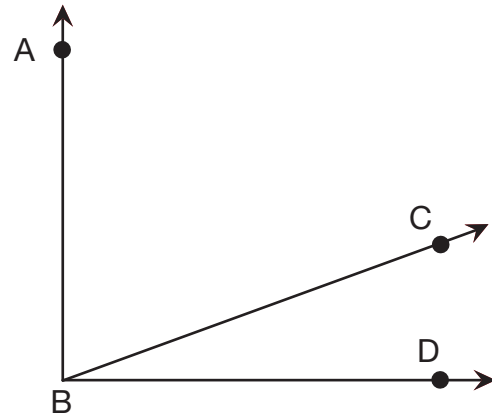
▲●☐ 11. ∠EFG is a right angle. Without using a protractor, find the measure of ∠EFH.

    _____
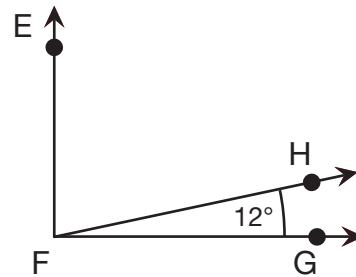
☐●■ 12. ∠MLK = ∠NLO. Without using a protractor, find the angle measure of ∠KLO.
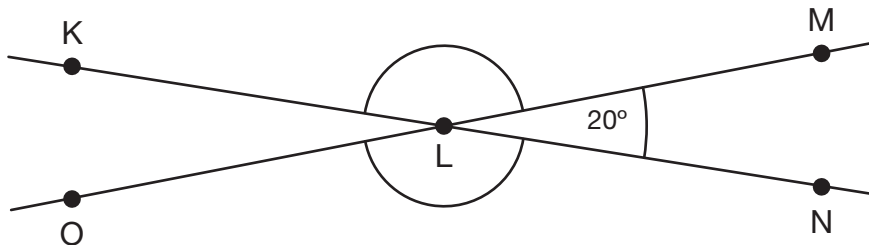
▲●■ **13. A.** Measure the angles in Triangle STU.
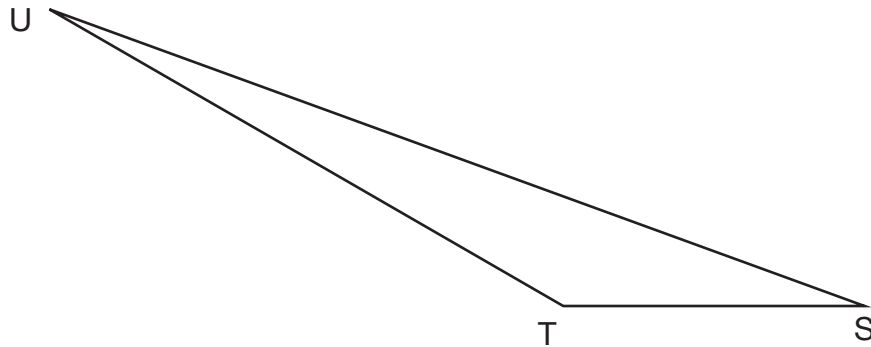
B. What is the sum of ∠S, ∠T and ∠U? _____

☐●■ **14.** Rectangle ABCD is built from three triangles. ∠ADE = ∠BCE. Without using a protractor, find the measures of the angles below. Write the measures near the angle.

A. ∠EDC = _____

B. ∠ECD = _____

C. ∠AED = _____

D. ∠BEC = _____
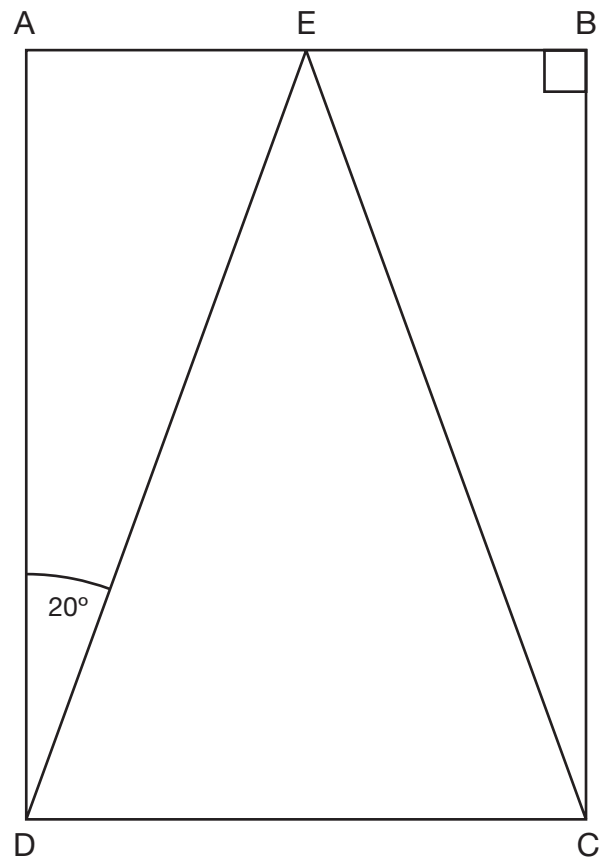
▲◻◻ **15. A.** Make the shape with solid lines using your Power Polygons™. Use the yellow square (A) and large green triangle (E). If you have enough pieces, you can make the whole shape in the dotted lines.

B. Find the dot on your shape. How many pieces come together at the dot?

_____

C. Are the angles at the dot acute, obtuse, or right?

_____

D. Estimate and then measure the size of the angle of each piece at the dot.

_____

E. Add all the angle measures at the dot. What is the sum of all the angle measures?

_____
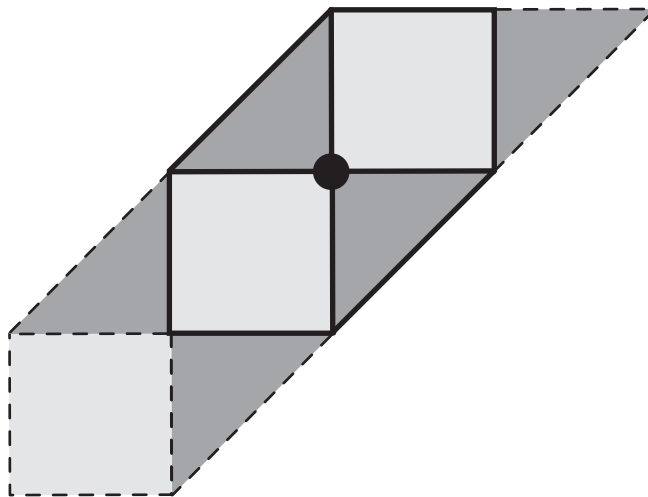
16. A. Make the part of the shape with solid lines using your Power Polygons™. Use orange squares (B), yellow hexagons (H), and small green triangles (N). If you have enough pieces, you can extend the shape as shown with dotted lines.

B. Find the dot on your shape. How many pieces come together at the dot?

_____

C. Are the angles at the dot acute, obtuse, or right?

_____

D. Estimate and then measure the size of the angle of each piece at the dot.

_____

E. Add all the angle measures at the dot. What is the sum of all the angle measures?

_____

17. A. Make the shape with the solid lines using your Power Polygons™. Use small green triangles (N) and red trapezoids (K). If you have enough pieces, you can extend the shape as shown with dotted lines.

B. Find the dot on your shape. How many pieces come together at the dot?

_____

C. Are the angles acute, obtuse, or right?

_____

D. Estimate and then measure the size of the angle of each piece at the dot.

_____

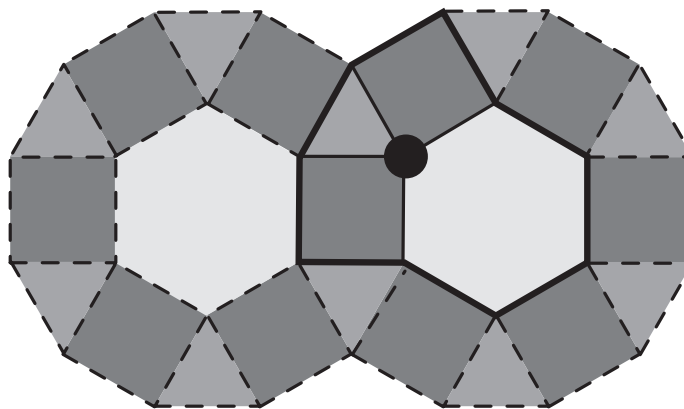**E.** Add all the angle measures at the dot. What is the sum of all the angle measures?

_____

F. Now find the square on your shape. How many pieces touch at the square ?

_____

G. Are the angles acute, obtuse, or right? Or is there another kind of angle? What is it?

_____

H. Estimate and then measure the size of the angle of each piece at the square.

_____

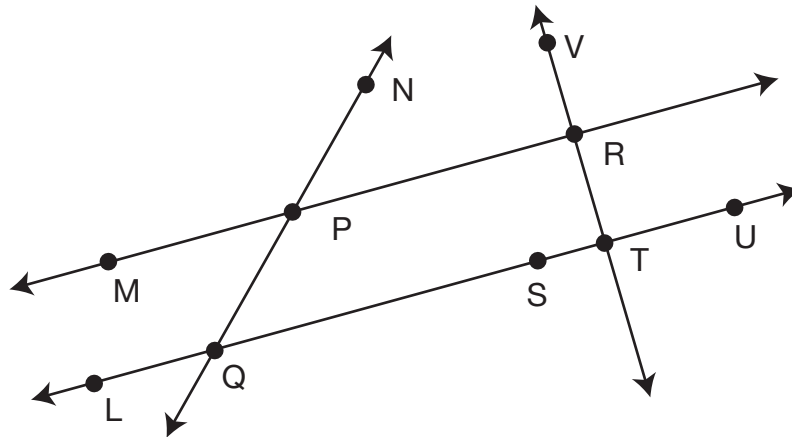**I.** Add all the angle measures. What is the sum of all the angle measures at the square?

_____
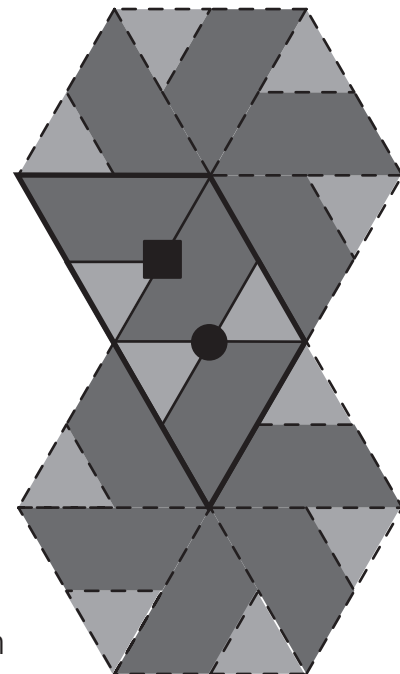
Lines

✓ Self-Check: Questions 18–21

18. **A.** Name one set of parallel lines. _____

    B. Name two lines that are perpendicular to each other.

    _____

19. **A.** Name a ray on the figure. _____

    B. Name a line segment on the figure. _____

    C. Find and name a quadrilateral on the figure. _____

20. Use a protractor to draw a line perpendicular to $\overleftrightarrow{VT}$.

21. Use a protractor to draw a line parallel to $\overleftrightarrow{VT}$.

Use the Self-Check Questions and menu to choose practice.

Workshop Menu			
Can I Do This?	**▲ Working On It!** I could use some extra help. *Jacob*	**● Getting It!** I just need some more practice. *Ana*	**■ Got It!** I'm ready for a challenge. *Nicholas*
Draw and identify lines that intersect, are perpendicular, or are parallel.	**Questions 22–24**	**Questions 23–25**	**Questions 25–26**

▲☐☐ **22.** The figure below is an octagon because it has 8 sides. Each side is a part of a line which means each side is a line segment.

A. What are two different ways you can name this octagon?

_____

B. Name 4 pairs of parallel lines that make up the octagon.

_____

C. Use your ruler to draw a line segment from Point D to Point H. Draw another line segment from Point B to Point F. Do $\overline{DH}$ and $\overline{BF}$ intersect? What kind of angle is formed at the intersection? What can you say about $\overline{DH}$ and $\overline{BF}$?

_____

_____
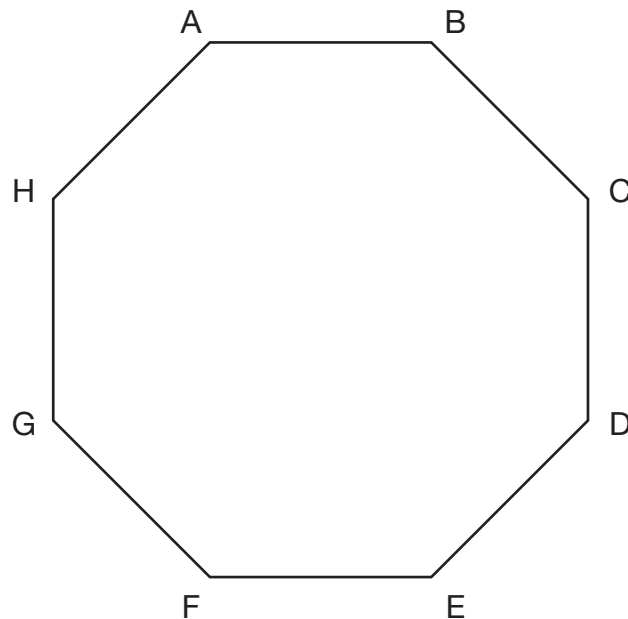
▲● □ **23.** **A.** Draw a line that is parallel to $\overleftrightarrow{AB}$ below. Name it $\overleftrightarrow{CD}$.

B. Draw a line $\overleftrightarrow{JK}$ that is perpendicular to $\overleftrightarrow{AB}$.

C. Does $\overleftrightarrow{JK}$ also intersect $\overleftrightarrow{CD}$? If so, tell if the intersection of $\overleftrightarrow{JK}$ and $\overleftrightarrow{CD}$ makes an acute angle, an obtuse angle, or a right angle.

_____

▲● □ **24.** **A.** Draw a line segment $\overline{RS}$ that intersects $\overleftrightarrow{AB}$ but not $\overleftrightarrow{CD}$.

B. Draw $\overleftrightarrow{MN}$ that intersects $\overleftrightarrow{CD}$ and forms an obtuse angle.

C. Draw a ray $\overrightarrow{WX}$ that intersects $\overleftrightarrow{MN}$.

A •

B •

25. A. Use these clues to draw Triangle JKL:

     Clue 1: Side JK is 6 cm long
     Clue 2: Angle K is a right angle
     Clue 3: Side KL is 8 cm long

B. Look at your Triangle JKL. Which of the following is close to the correct angle measures for Triangle JKL? Fill in the circle by the correct letter.

    ○ **A.** ∠J 80°, ∠K 90°, ∠L 10°

    ○ **B.** ∠J 125°, ∠K 90°, ∠L 79°

    ○ **C.** ∠J 60°, ∠K 90°, ∠L 30°

    ○ **D.** ∠J 20°, ∠K 90°, ∠L 27°

26. Use these clues to draw Triangle MNO.

    Clue 1: Angle M is 120°
    Clue 2: Angle N is 30°
    Clue 3: Side MN is 4 cm long