

Chapter 8 Measuring Drawing and Classifying Angles

Teacher Guide and Diagnostic Answer Key

Teacher Guide

Teacher Chapter-at-a-Glance

A protractor for demonstration
Spend most time on scale selection and reasonableness, not on classification vocabulary alone.
Ask: what tells you that 128° cannot be the reading for an angle that looks acute?

Mastery Decision Guide

A missed Tripwire does not automatically mean “redo the chapter.” Confirm the likely misconception, reteach the smallest prerequisite or representation that addresses it, and then use a fresh item before moving on.

Missed Tripwire #1 → The wrong protractor scale was read and the visual benchmark was ignored. Next move: Reset the centre on the vertex, align the baseline with 0° , choose the scale that starts there, and check the result against the angle type.

Confirmation and Fresh Recheck

Confirm with: Ask the student to point to the baseline and choose which protractor scale begins at 0° on that arm.

Fresh recheck: Show a different protractor orientation with an acute angle and two scale readings; require justification of the scale choice.

Decision rule: Move forward only when the fresh response is secure and the reasoning survives the changed representation or context.

Diagram Production Notes — Chapter 8

Use the diagram master IDs:

Ch08-D01 — Angle Parts

Ch08-D02 — Angle Classification Chart

Ch08-D03 — Benchmark Turn Wheel

Ch08-D04 — Correct Protractor Placement

Ch08-D05 — Wrong Scale Trap

Ch08-D06 — Drawing a 50° Angle

The protractor diagrams must be large enough for students to see the scale direction. The wrong-scale trap must clearly show why the incorrect reading does not match the visual size of the angle.

Ready to Learn Check

Quick check before starting. A wrong response below points to a prerequisite worth confirming before the chapter builds on it.

1. What angle measure makes a right angle?

Correct answer: 90°

Likely wrong answer: 180° or another benchmark

Possible misconception: Right-angle benchmark is not secure.

Next move: Use a square corner and connect one quarter-turn to 90° .

2. Is 45° acute, right, obtuse, or straight?

Correct answer: acute

Likely wrong answer: right or obtuse

Possible misconception: Angle categories are not anchored to 90° .

Next move: Sort several angles around the 90° benchmark before using a protractor.

3. What is the point where the two arms of an angle meet called?

Correct answer: vertex

Likely wrong answer: endpoint or side

Possible misconception: The meeting point of the rays is not being named correctly.

Next move: Point to the common endpoint of two rays and name it vertex.

Ready-to-Learn item 1

Correct answer: 90°

Likely wrong answer: 180° or another benchmark

Misconception: Right-angle benchmark is not secure.

Next move: Use a square corner and connect one quarter-turn to 90° .

Ready-to-Learn item 2

Correct answer: acute

Likely wrong answer: right or obtuse

Misconception: Angle categories are not anchored to 90° .

Next move: Sort several angles around the 90° benchmark before using a protractor.

Ready-to-Learn item 3

Correct answer: vertex

Likely wrong answer: endpoint or side

Misconception: The meeting point of the rays is not being named correctly.

Next move: Point to the common endpoint of two rays and name it vertex.

Practice

Assign the full set or select items for targeted review. Teacher solutions follow each question.

1. 25°

Solution: 1. acute

2. 90°

Solution: 2. right

3. 115°

Solution: 3. obtuse

4. 180°

Solution: 4. straight

5. 270°

Solution: 5. reflex

6. 360°

Solution: 6. full turn

7. 8°

Solution: 7. acute

8. 179°

Solution: 8. obtuse

9. An angle looks acute. A student measures it as 140° . What should the student check?

Solution: 9. The student should check the protractor scale. An acute angle should measure less than 90° .

10. An angle looks obtuse. A student measures it as 35° . What likely happened?

Solution: 10. The student likely read the wrong scale. An obtuse angle should be greater than 90° .

11. A student forgets the degree symbol and writes 75. What should be written instead? Put these steps in the correct order.

Solution: 11. The student should write 75° . Correct order:

12. Read the number where the other arm crosses the scale.

Solution: 12. Put the centre mark on the vertex.

13. Put the centre mark on the vertex.

Solution: 13. Line up one arm with 0° .

14. Line up one arm with 0° .

Solution: 14. Choose the scale that starts from the baseline arm.

15. Choose the scale that starts from the baseline arm.

Solution: 15. Read the number where the other arm crosses the scale.

16. Draw a 40° angle.

Solution: 16–19. Student drawings should be checked for correct vertex placement, baseline alignment, and angle size.

17. Draw a 90° angle.

Solution: 16–19. Student drawings should be checked for correct vertex placement, baseline alignment, and angle size.

18. Draw a 130° angle.

Solution: 16–19. Student drawings should be checked for correct vertex placement, baseline alignment, and angle size.

19. Draw a 180° angle.

Solution: 16–19. Student drawings should be checked for correct vertex placement, baseline alignment, and angle size.

Chapter Answer Key

Tripwire Check

The answer is not reasonable.

An acute angle is less than 90° .

128°

is obtuse, not acute.

The student likely read the wrong protractor scale.

Worksheet 1: Guided Practice

1.

- a. acute
- b. right
- c. obtuse
- d. straight

2.

- a. 90°
- b. 90°

c. 90° , 180°

d. 180°

3.

a. vertex

b. 0°

c. baseline

4.

a. Less than 90° .

b. Greater than 90° .

Worksheet 2: Independent Practice

1.

a. acute

b. acute

c. right

d. obtuse

e. obtuse

f. obtuse

g. straight

h. reflex

i. full turn

2.

a. The degree symbol is missing. It should be 90° .

b. 180° is a straight angle. A full turn is 360° .

c. 89° is acute. A right angle is exactly 90° .

3.

Student drawings should be checked with a protractor. Each drawing should show a clear vertex, baseline, and second arm through the correct degree mark.

Worksheet 3: Mixed Practice & Application

1.

The answer should be checked because an angle smaller than a right angle is acute.

An acute angle must be less than 90° .

130°

is obtuse, so the student likely read the wrong scale.

2.

- a. obtuse
- b. 95° is greater than 90° and less than 180° , so it is obtuse.

3.

- a. 20° is acute.
- b. The ground line acts as the baseline. If it is not lined up with 0° , the angle reading or drawing will be wrong.

4.

The degree symbol is missing.

The measure should be written as:

75°

The symbol matters because it shows the number is an angle measure.

5.

- a. No. If the angle is slightly bigger than a right angle, it should be greater than 90° .
- b. Yes. 105° is slightly greater than 90° , so it is reasonable.

6.

- a. reflex angle
- b. A reflex angle is greater than 180° and less than 360° . Since 240° is between those values, it is reflex.

Diagnostic Key — High-Leverage Items

Tripwire Check

Correct answer: The answer is not reasonable; an acute angle must be less than 90° . The student should reread the scale that begins at the baseline arm.

Likely wrong answer: 128° accepted without checking.

Misconception: The wrong protractor scale was read and the visual benchmark was ignored.

Next move: Reset the centre on the vertex, align the baseline with 0° , choose the scale that starts there, and check the result against the angle type.

Tripwire Diagnostic

Correct answer: The answer is not reasonable; an acute angle must be less than 90° . The student should reread the scale that begins at the baseline arm.

Likely wrong answer: 128° accepted without checking.

Misconception: The wrong protractor scale was read and the visual benchmark was ignored.

Next move: Reset the centre on the vertex, align the baseline with 0° , choose the scale that starts there, and check the result against the angle type.

Exit Ticket Diagnostic — High-Leverage Item

Correct answer: 42° ; the angle is acute, so the acute reading is the reasonable one.

Likely wrong answer: 138°

Misconception: The wrong protractor scale was selected or the visual benchmark was ignored.

Next move: Reset the centre and baseline, choose the scale that begins at 0° on the baseline arm, then check acute/obtuse reasonableness.

Variation Lab — Expected Ideas

1. Rotation changes orientation, not the opening; the angle remains 40° .
2. Use the scale that starts at 0° on the aligned baseline arm and check whether the result matches the visible angle type.
3. 89° acute, 90° right, 91° obtuse; the boundary value 90° changes the classification.

Transfer Check — Suggested Responses

Familiar: acute. Altered: 122° because an obtuse angle is between 90° and 180° . Non-routine: put the centre on the vertex, align the ground/baseline with 0° , then read the correct scale. Repair: the centre must sit on the vertex.

Exit Ticket — Answers

1. obtuse
2. 42° ; it matches an acute angle and the scale beginning at the aligned baseline
3. centre on vertex; baseline at 0° ; choose the scale that starts at that baseline