

Measuring Angles with a Protractor

Name: _____ Date: _____ Score: _____ / 24

Q Quick Review

A **protractor** is a tool that measures how wide an angle opens, in degrees from 0° to 180° . Once you know an angle's measure, you can name its type. An **acute angle** is less than 90° — it looks sharp and narrow. A **right angle** is exactly 90° — a perfect square corner. An **obtuse angle** is greater than 90° but less than 180° — it looks wide and open. A **straight angle** is exactly 180° , a flat line. The bigger the number of degrees, the wider the angle opens.

◇ **Example:** A protractor shows an angle that opens to 125° . Is it acute, right, or obtuse?
 ⇒ Compare the measure to 90° . Since 125° is greater than 90° but still less than 180° , the angle is wider than a square corner. That makes it an obtuse angle. A good check: obtuse angles look wide open, and 125° is definitely more than a square corner.

Answer: obtuse

PRACTICE

Name each angle as acute, right, or obtuse based on its measure.

- | | | | |
|---------------------------------------|-------|--|-------|
| 1. An angle that opens to 30° | _____ | 11. An angle that opens to 170° | _____ |
| 2. An angle that opens to 90° | _____ | 12. An angle that opens to 89° | _____ |
| 3. An angle that opens to 150° | _____ | 13. An angle that opens to 91° | _____ |
| 4. An angle that opens to 45° | _____ | 14. A right angle, like the corner of a book | _____ |
| 5. An angle that opens to 110° | _____ | 15. An angle that opens to 5° | _____ |
| 6. An angle that opens to 75° | _____ | 16. An angle that opens to 120° | _____ |
| 7. An angle that opens to 135° | _____ | 17. An angle that opens to 80° | _____ |
| 8. An angle that opens to 15° | _____ | 18. An angle that opens to 145° | _____ |
| 9. An angle that opens to 100° | _____ | 19. The square corner of a piece of paper | _____ |
| 10. An angle that opens to 60° | _____ | 20. An angle that opens to 55° | _____ |

◆ Word Problems

21. Jamal measures the angle of a ramp with a protractor and it reads 25° . Is the ramp angle acute, right, or obtuse? _____
22. A door is opened until the angle between the door and the wall reads 130° on a protractor. What type of angle is that?

23. The corner where two walls of Mia's classroom meet forms an angle that measures 90° . What type of angle is the corner?

24. Two clock hands form an angle that opens to 65° . Later they form an angle that opens to 115° . Which angle is acute and which is obtuse?



Answer Keys

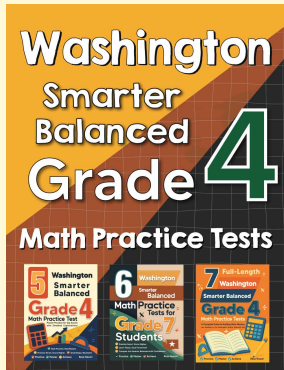
- | | |
|------------|--|
| 1. acute | 13. obtuse |
| 2. right | 14. right |
| 3. obtuse | 15. acute |
| 4. acute | 16. obtuse |
| 5. obtuse | 17. acute |
| 6. acute | 18. obtuse |
| 7. obtuse | 19. right |
| 8. acute | 20. acute |
| 9. obtuse | 21. acute |
| 10. acute | 22. obtuse |
| 11. obtuse | 23. right |
| 12. acute | 24. 65° is acute, 115° is obtuse |

Step-by-Step Explanations

- | | |
|---|---|
| 1. Since 30° is less than 90° , the angle is acute. | 13. Since 91° is just over 90° , the angle is obtuse. |
| 2. Exactly 90° is a square corner, so the angle is right. | 14. A square corner is exactly 90° , so this angle is right. |
| 3. Since 150° is more than 90° , the angle is obtuse. | 15. Since 5° is far less than 90° , the angle is acute. |
| 4. Since 45° is less than 90° , the angle is acute. | 16. Since 120° is more than 90° , the angle is obtuse. |
| 5. Since 110° is more than 90° , the angle is obtuse. | 17. Since 80° is less than 90° , the angle is acute. |
| 6. Since 75° is less than 90° , the angle is acute. | 18. Since 145° is more than 90° , the angle is obtuse. |
| 7. Since 135° is more than 90° , the angle is obtuse. | 19. A paper corner is a perfect 90° angle, so it is right. |
| 8. Since 15° is less than 90° , the angle is acute. | 20. Since 55° is less than 90° , the angle is acute. |
| 9. Since 100° is just past 90° , the angle is obtuse. | 21. The angle measures 25° , which is less than 90° , so it is an acute angle. |
| 10. Since 60° is less than 90° , the angle is acute. | 22. Since 130° is greater than 90° and less than 180° , the angle is obtuse. |
| 11. Since 170° is less than 180° but more than 90° , it is obtuse. | 23. An angle that measures exactly 90° is a right angle, a perfect square corner. |
| 12. Since 89° is just under 90° , the angle is acute. | 24. 65° is less than 90° , so it is acute. 115° is more than 90° , so it is obtuse. |



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