

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

◇ **Example:** A protractor shows an angle that opens to  $125^\circ$ . Is it acute, right, or obtuse?  
 ⇒ Compare the measure to  $90^\circ$ . Since  $125^\circ$  is greater than  $90^\circ$  but still less than  $180^\circ$ , the angle is wider than a square corner. That makes it an obtuse angle. A good check: obtuse angles look wide open, and  $125^\circ$  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 $30^\circ$  | _____ | 11. An angle that opens to $170^\circ$       | _____ |
| 2. An angle that opens to $90^\circ$  | _____ | 12. An angle that opens to $89^\circ$        | _____ |
| 3. An angle that opens to $150^\circ$ | _____ | 13. An angle that opens to $91^\circ$        | _____ |
| 4. An angle that opens to $45^\circ$  | _____ | 14. A right angle, like the corner of a book | _____ |
| 5. An angle that opens to $110^\circ$ | _____ | 15. An angle that opens to $5^\circ$         | _____ |
| 6. An angle that opens to $75^\circ$  | _____ | 16. An angle that opens to $120^\circ$       | _____ |
| 7. An angle that opens to $135^\circ$ | _____ | 17. An angle that opens to $80^\circ$        | _____ |
| 8. An angle that opens to $15^\circ$  | _____ | 18. An angle that opens to $145^\circ$       | _____ |
| 9. An angle that opens to $100^\circ$ | _____ | 19. The square corner of a piece of paper    | _____ |
| 10. An angle that opens to $60^\circ$ | _____ | 20. An angle that opens to $55^\circ$        | _____ |

### ◆ Word Problems

21. Jamal measures the angle of a ramp with a protractor and it reads  $25^\circ$ . Is the ramp angle acute, right, or obtuse? \_\_\_\_\_
22. A door is opened until the angle between the door and the wall reads  $130^\circ$  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  $90^\circ$ . What type of angle is the corner?  
 \_\_\_\_\_
24. Two clock hands form an angle that opens to  $65^\circ$ . Later they form an angle that opens to  $115^\circ$ . Which angle is acute and which is obtuse?  
 \_\_\_\_\_



## Answer Keys

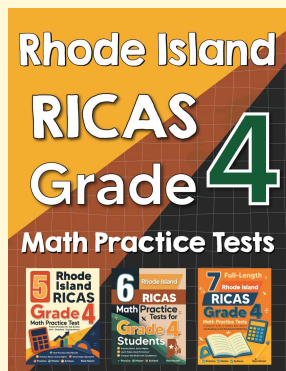
- |            |  |
|------------|--|
| 1. acute   | 13. obtuse                                     |
| 2. right   | 14. right                                      |
| 3. obtuse  | 15. acute                                      |
| 4. acute   | 16. obtuse                                     |
| 5. obtuse  | 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. $65^\circ$ is acute, $115^\circ$ is obtuse |

### Step-by-Step Explanations

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



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