

# 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

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



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