

# Grade 4 · Measuring and Adding Angles · Worksheet Answer Key

Common Core 4.MD.C.5, 4.MD.C.6, 4.MD.C.7 · mathovore.fr

Each solution shows how the angle is read from the protractor or computed from degrees. Check that your measures use the correct scale and that parts add up to the whole angle. Compare your steps and diagrams with the ones shown.

## Grade 4 Common Core: 4.MD.C.5 · 4.MD.C.6 · 4.MD.C.7

### Problem 1: Quarter turn

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A full turn is  $360^\circ$ . A quarter turn is one fourth of it:  $360 \div 4 = 90$ .

A quarter turn is  $90^\circ$ .

### Problem 2: Half turn and three-quarter turn

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(a)  $360 \div 2 = 180$ . A half turn is  $180^\circ$ .

(b) A quarter turn is  $90^\circ$ , so three quarter turns make  $3 \times 90 = 270$ . A three-quarter turn is  $270^\circ$ .

### Problem 3: Fraction of a circle

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One eighth of  $360^\circ$  is  $360 \div 8 = 45$ .

The angle measures  $45^\circ$ .

### Problem 4: Counting one-degree angles

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Each one-degree angle adds  $1^\circ$ . Seventy-five of them make  $75 \times 1 = 75$  degrees.

The angle measures  $75^\circ$ .

### Problem 5: Comparing two angles

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Angle A measures  $40^\circ$  and angle B measures  $25^\circ$ .

$40 - 25 = 15$ . Angle A is greater by  $15^\circ$ .

### Problem 6: Reading a protractor: small angle

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Ray A lies on 0. Ray B crosses the mark at 40 on the same scale.

The angle measures  $40^\circ$ .

### Problem 7: Reading a protractor: wide angle

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Ray A lies on 0 on the right. Follow the scale that starts at 0 on the right until ray B: it crosses 125.

The angle measures  $125^\circ$ .

### Problem 8: Reading from the left

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Ray A is on the left, so use the gray scale that starts at 0 on the left. Ray B crosses  $50^\circ$  on that scale.

Check:  $180 - 130 = 50$ .

The angle measures  $50^\circ$ .

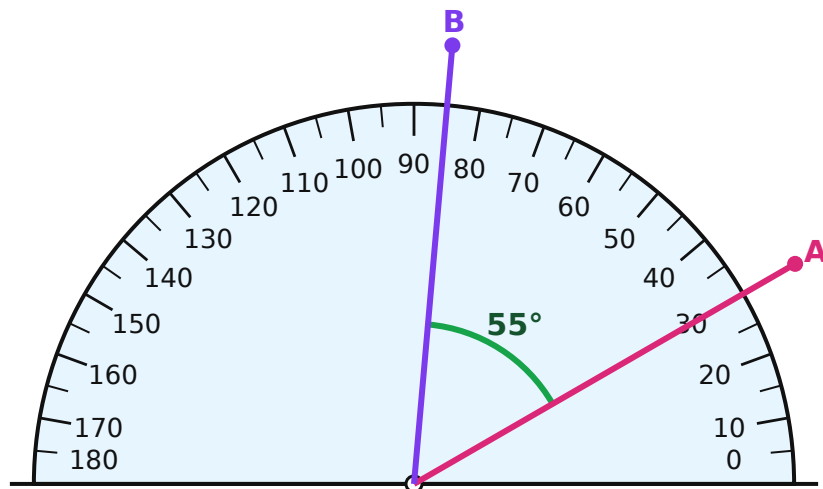
### Problem 9: Rays not on zero

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Ray A crosses  $30^\circ$  and ray B crosses  $85^\circ$  on the same scale.

$85 - 30 = 55$ .

The angle measures  $55^\circ$ .



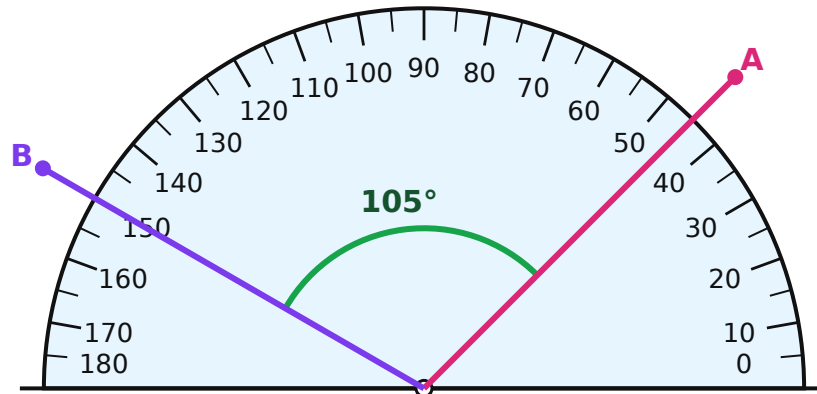
### Problem 10: Rays not on zero: wide angle

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Ray A crosses  $45^\circ$  and ray B crosses  $150^\circ$ .

$$150 - 45 = 105.$$

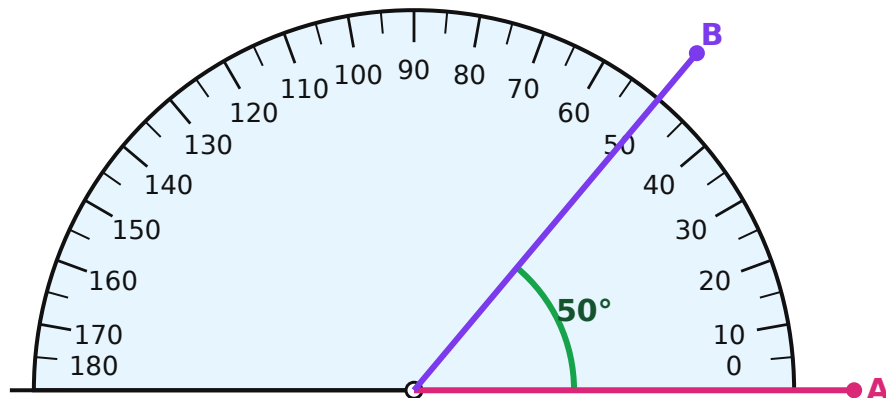
The angle measures  $105^\circ$ .



### Problem 11: Draw a 50 degree angle

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1. Draw ray OA and mark the vertex O.
2. Put the center of the protractor on O and the baseline on ray OA, with 0 on ray OA.
3. Find 50 on the scale that starts at 0 and make a small mark.
4. Remove the protractor and draw a ray from O through the mark. Label the angle  $50^\circ$ .

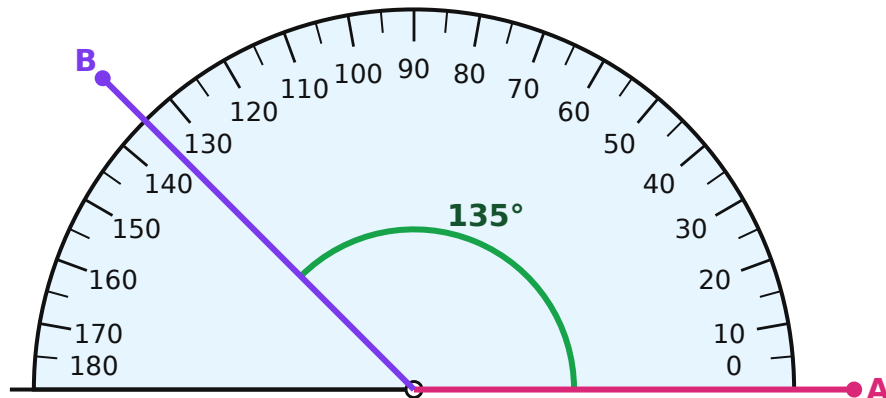


### Problem 12: Draw a 135 degree angle

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Put the baseline on ray OA with 0 on OA, which is the right end. Read the scale that starts at 0 on the right, find 135, and mark it. Draw a ray from O through the mark.

The scale that starts at 0 on the right shows 135 at the mark.



### Problem 13: Adding two angles

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The whole angle is made of two parts.

$$35 + 40 = 75.$$

Angle AOB measures  $75^\circ$ .

### Problem 14: Adding three angles

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$$20 + 35 + 25 = 55 + 25 = 80.$$

Angle AOB measures  $80^\circ$ .

### Problem 15: Unknown angle in a square corner

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The parts add up to  $90^\circ$ :  $35 + x = 90$ .

$$x = 90 - 35 = 55.$$

The unknown angle is  $55^\circ$ .

### **Problem 16: Unknown angle on a straight line**

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$$115 + x = 180.$$

$$x = 180 - 115 = 65.$$

The unknown angle is  $65^\circ$ .

### **Problem 17: Equation with a letter**

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The parts add up to the whole:  $48 + x = 130$ .

$$x = 130 - 48 = 82.$$

$$\text{Check: } 48 + 82 = 130.$$

The unknown angle is  $82^\circ$ .

### **Problem 18: Pizza slices**

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A full turn is  $360^\circ$ . One slice:  $360 \div 8 = 45$ , so  $45^\circ$ .

Three slices:  $3 \times 45 = 135$ . Maya's slices make an angle of  $135^\circ$ .

### **Problem 19: Angle on a clock**

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The 12 numbers split the circle into 12 equal angles:  $360 \div 12 = 30$  degrees each.

From 12 to 4 there are 4 of these angles:  $4 \times 30 = 120$ .

The angle measures  $120^\circ$ .

### **Problem 20: Swinging gate**

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$$65 + 25 = 90. \text{ Then } 90 - 30 = 60.$$

The gate is open  $60^\circ$ .

### **Problem 21: Spinning in place**

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$$90 + 45 + 135 = 270.$$

$$270 \div 360 = \frac{3}{4}, \text{ because } 270 \text{ is three times } 90 \text{ and } 360 \text{ is four times } 90.$$

Jamal turned  $270^\circ$ , which is  $\frac{3}{4}$  of a full turn.

## Problem 22: Find the mistake

Ray A is not on the 0 mark. It crosses  $25^\circ$ , so Ava found the position of ray B, not the size of the angle between the rays.

$$70 - 25 = 45.$$

The correct measure is  $45^\circ$ .

