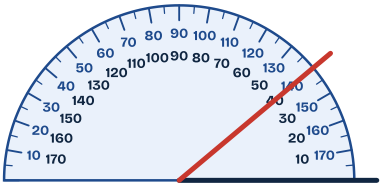
# Constructions with compass and protractor

## Free Extra Maths Class · Grade 7

**Name:** _____

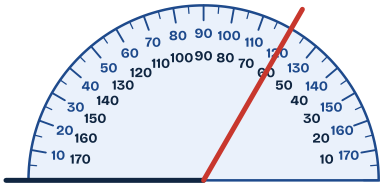
**Remember:** Read the protractor on the scale that starts at your arm's 0. Bisect 60° for 30° and 90° for 45°. Do not rub out arcs.

**1.** Read the protractor. How big is the red angle?



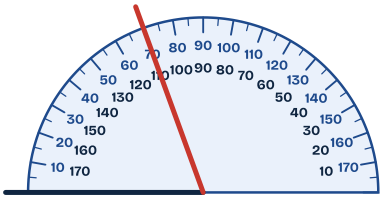
**Answer:** _____

**2.** Read the protractor. How big is the red angle?



**Answer:** _____

**3.** Read the protractor. How big is the red angle?



**Answer:** _____

**4.** Name each angle: 35°; 90°; 140°; 180°; 210°

**Answer:** _____

**5.** Which instrument do you use to **a)** draw an arc **b)** measure an angle **c)** draw a 6 cm line?

**Answer:** _____

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**6.** Draw line AB = 8 cm. Bisect AB with a compass and ruler. Call the midpoint M. How long is AM?

**Answer:** _____

**7.** Construct a 60° angle without a protractor. Then bisect it. What angle do you get?

**Answer:** _____

**8.** Construct a 90° angle at point P on a line. Bisect it. What angle do you get?

**Answer:** _____

**9.** Construct triangle ABC with AB = 7 cm, BC = 5 cm and AC = 6 cm.

**Answer:** _____

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**10.** Construct an equilateral triangle with sides of 5 cm. Measure the three angles.

**Answer:** _____

**11.** Why can you not construct a triangle with sides of 3 cm, 4 cm and 9 cm?

**Answer:** _____

**12.** Construct triangle PQR with PQ = 6 cm, ∠P = 50° and ∠Q = 60° (use a protractor). Measure ∠R.

**Answer:** _____

**13.** Name two things you know about the perpendicular bisector of a line AB.

**Answer:** _____

**14.** How can you construct a 120° angle without a protractor?

**Answer:** _____

**15.** Why should you not rub out your construction arcs?

**Answer:** _____

**I got _____ out of 15** ☆ ☆ ☆

# Memo

## Constructions with compass and protractor

Other correct methods are also right.

**1.** **40°**
Bottom arm to the right: read the inner scale.

**2.** **120°**
Bottom arm to the left: read the outer scale. It is obtuse, so not 60°.

**3.** **70°**
Bottom arm to the left: outer scale. It is acute, so not 110°.

**4.** **acute; right; obtuse; straight; reflex**
acute < 90° = right < obtuse < 180° = straight < reflex < 360°

**5.** **a) compass b) protractor c) ruler**

**6.** **AM = 4 cm**
Arcs from A and B (wider than 4 cm), join the crossing points. The line cuts AB at M, at 90°.

**7.** **30°**
Arc from O, cuts the line at P; the same width from P gives Q; OQ makes 60°. Bisect: 60° ÷ 2 = 30°.

**8.** **45°**
An arc around P cuts the line twice; wider arcs from those points cross above P; join to P = 90°. 90° ÷ 2 = 45°.

**9.** **Check: measure the three sides.**
Draw AB = 7 cm. Arc of 6 cm from A, arc of 5 cm from B. The crossing point is C.

**10.** **Each angle is 60°.**
All three sides equal, so all three angles equal: 180° ÷ 3 = 60°.

**11.** **3 + 4 = 7 is shorter than 9, so the arcs never cross.**
The two shorter sides together must be longer than the longest side.

**12.** **∠R = 70°**
180° – 50° – 60° = 70°

**13.** **It goes through the midpoint of AB and it is perpendicular (90°) to AB.**

**14.** **Construct 60° on a straight line: the angle on the other side is 180° – 60° = 120°.**
Or: step off 60° twice on the arc.

**15.** **They show (prove) how you constructed it.**
The teacher gives marks for the arcs.