Name _____ Date _____

8.2 The parts of a circle — worksheet

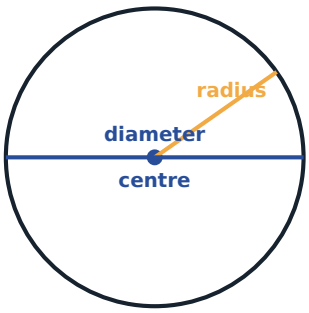
Name the parts of a circle and use the relationship between radius and diameter. · 47 questions · Show your working.

Remember

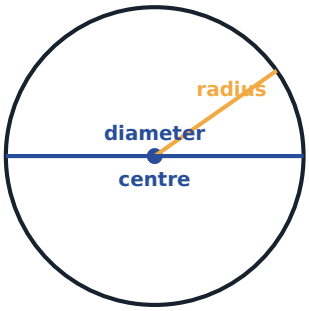
- The **centre** is the middle; the **radius** reaches from it to the edge.
- The **diameter** goes right across through the centre, so **d = 2r** and **r = d ÷ 2**.
- The **circumference** is the distance all the way round — the perimeter of a circle.
- A **chord** joins two points on the circle. The diameter is the longest chord.
- An **arc** is a part of the circumference.
- A circle has **infinitely many lines of symmetry** — every line through the centre.
- Its order of rotational symmetry is infinite: any turn about the centre leaves it unchanged.
- Read the question carefully: “how wide across” means the diameter, “how far from the middle” means the radius.

A · Fluency — Radius, diameter and the names.

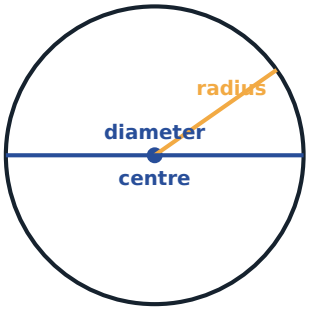
1 A circle has radius 3 cm. What is its diameter, in cm?



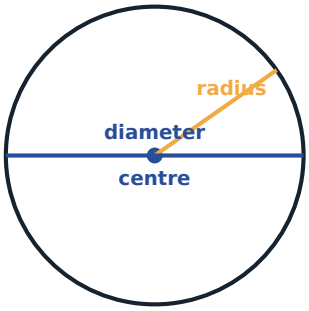
2 A circle has radius 5 cm. What is its diameter, in cm?



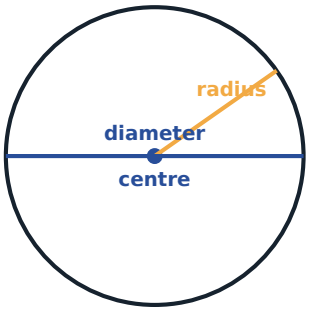
3 A circle has radius 8 cm. What is its diameter, in cm?



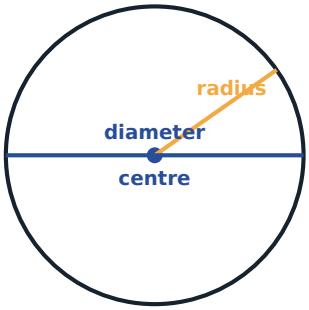
4 A circle has radius 10 cm. What is its diameter, in cm?



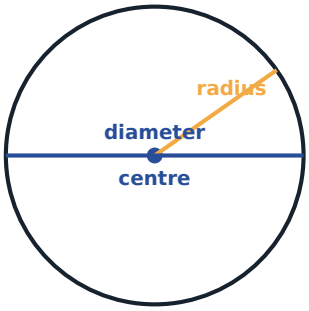
5 A circle has radius 12 cm. What is its diameter, in cm?



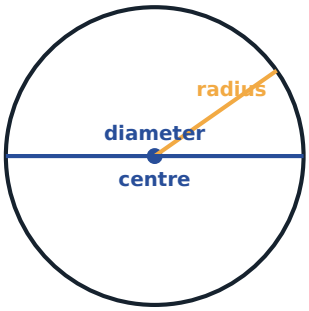
6 A circle has radius 25 cm. What is its diameter, in cm?



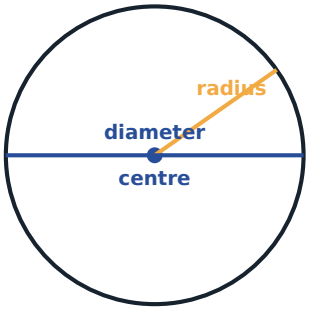
7 A circle has radius 40 cm. What is its diameter, in cm?



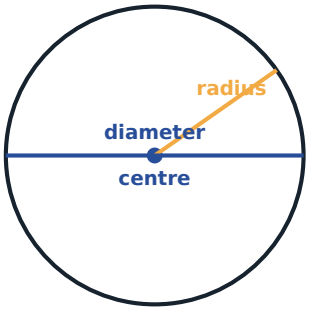
8 A circle has radius 7 cm. What is its diameter, in cm?



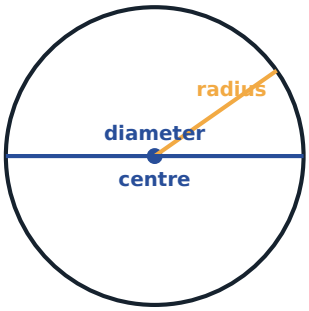
9 A circle has radius 15 cm. What is its diameter, in cm?



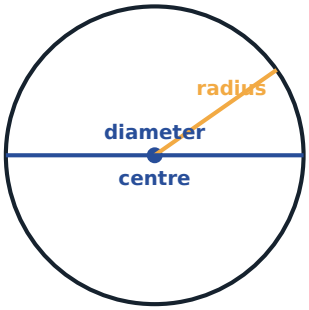
10 A circle has radius 50 cm. What is its diameter, in cm?



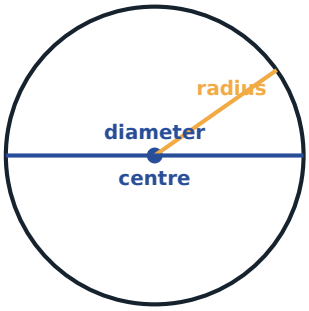
11 A circle has diameter 6 cm. What is its radius, in cm?



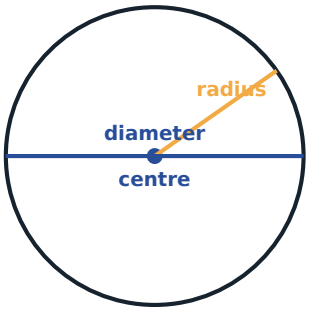
12 A circle has diameter 10 cm. What is its radius, in cm?



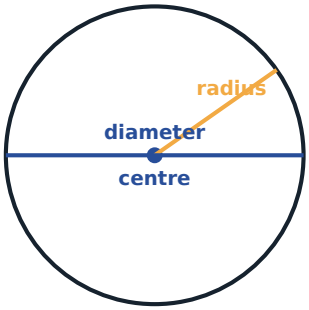
13 A circle has diameter 16 cm. What is its radius, in cm?



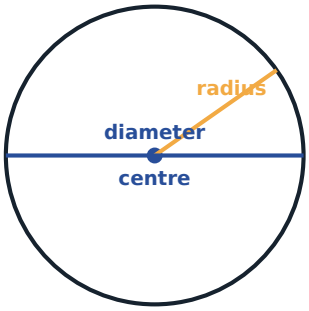
14 A circle has diameter 24 cm. What is its radius, in cm?



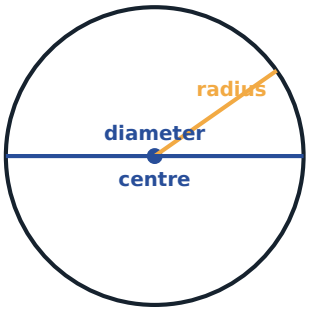
15 A circle has diameter 30 cm. What is its radius, in cm?



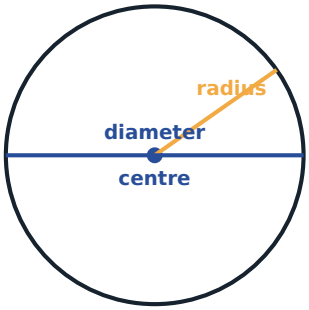
16 A circle has diameter 50 cm. What is its radius, in cm?



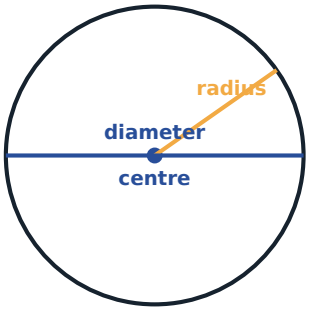
17 A circle has diameter 14 cm. What is its radius, in cm?



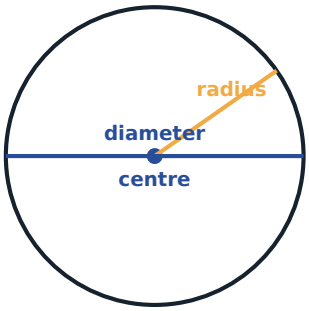
18 A circle has diameter 44 cm. What is its radius, in cm?



19 A circle has diameter 100 cm. What is its radius, in cm?



20 A circle has diameter 8 cm. What is its radius, in cm?



21 Which part of a circle is *the distance from the centre to the edge*?

22 Which part of a circle is *the distance right across through the centre*?

23 Which part of a circle is *the distance all the way round the outside*?

24 Which part of a circle is *the exact middle of the circle*?

25 Which part of a circle is *a straight line from one point on the circle to another, through the centre*?

26 Which part of a circle is *part of the circumference*?

B · Reasoning — How the parts relate.

27 How are the radius and the diameter related?

- ☐ They are equal
- ☐ The diameter is twice the radius
- ☐ The radius is twice the diameter
- ☐ They are unrelated

28 What is the circumference of a circle?

- ☐ The distance across it
- ☐ The distance all the way round it
- ☐ The area inside it
- ☐ Half the diameter

29 How many lines of symmetry does a circle have?

- ☐ 1
- ☐ 2
- ☐ 4
- ☐ Infinitely many

30 What is the order of rotational symmetry of a circle?
- ☐ 1
- ☐ 2
- ☐ 4
- ☐ Infinite

31 Is every diameter also a chord?
- ☐ Yes
- ☐ No

32 Is every chord also a diameter?
- ☐ Yes
- ☐ No

33 A circle has radius r. What is the distance from one side to the other through the centre?
- ☐ r
- ☐ 2r
- ☐ r ÷ 2
- ☐ 4r

34 Why does every circle have infinitely many lines of symmetry?
- ☐ Because it is round
- ☐ Because every line through the centre splits it into two matching halves
- ☐ Because it has no corners
- ☐ It does not

C · Challenge — Circles that touch and fit.

35 A circle has diameter 18 cm. A second circle has a radius equal to that diameter. What is the second circle's diameter, in cm?

36 Two circles of radius 7 cm sit side by side, touching. How far apart are their centres, in cm?

37 A circle of radius 9 cm sits exactly inside a square. What is the side of the square, in cm?

38 Four circles of radius 5 cm fit in a row inside a rectangle, each touching the next. How long is the rectangle, in cm?

39 A circular pond of diameter 12 m has a path 1 m wide all round it. What is the diameter of the outer edge of the path, in m?

D · Word problems — Wheels, plates and ponds.

40 A bicycle wheel has radius 35 cm. What is its diameter, in cm?

41 A dinner plate has diameter 26 cm. What is its radius, in cm?

42 A circular table has radius 60 cm. How wide is it across, in cm?

43 A coin has diameter 24 mm. What is its radius, in mm?

44 A roundabout has diameter 30 m. How far is it from the centre to the edge, in m?

45 A clock face has radius 11 cm. What is the distance from the 12 to the 6, in cm?

46 A gardener walks all the way round a circular lawn. Which part of the circle has he walked?

47 A pizza is cut straight through the middle. What is the name of that cut?