

Circle Theorems Mastery

Practice Worksheet (Compact Layout)

I DO

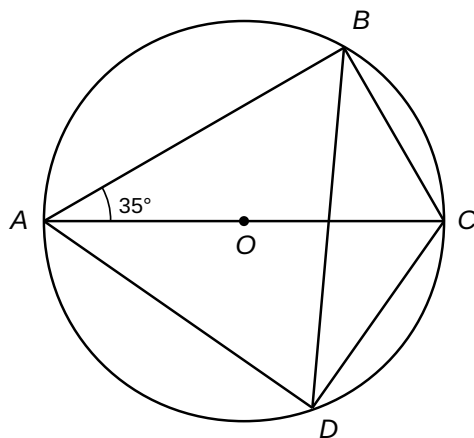


Diagram NOT accurately drawn

A , B , C , and D are points on the circumference of a circle, centre O .

AC is a diameter of the circle.

Angle $BAC = 35^\circ$.

Work out the size of angle BDC .

You must give reasons for each stage of your working.

WE DO

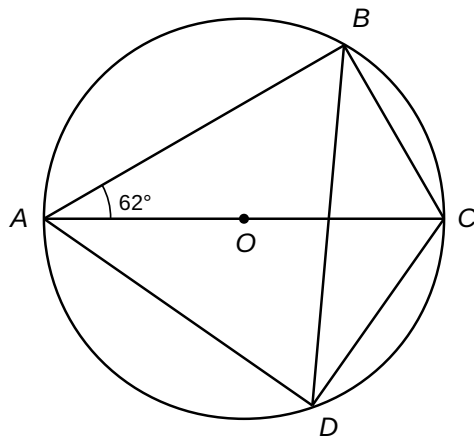


Diagram NOT accurately drawn

A , B , C , and D are points on the circumference of a circle, centre O .

AC is a diameter of the circle.

Angle $BAC = 62^\circ$.

Work out the size of angle BDC .

You must give reasons for each stage of your working.

YOU DO 1

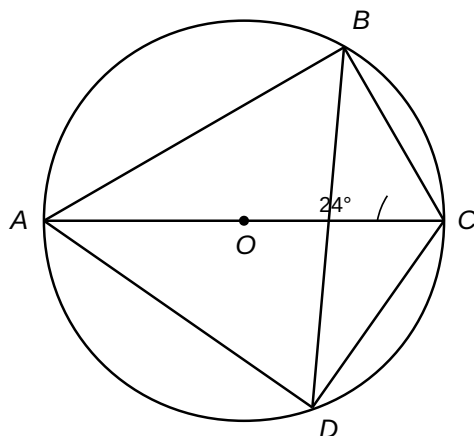


Diagram NOT accurately drawn

A, B, C, and D are points on the circumference of a circle, centre O.

AC is a diameter of the circle.

Angle $BCA = 24^\circ$.

Work out the size of angle BDA.

You must give reasons for each stage of your working.

YOU DO 2

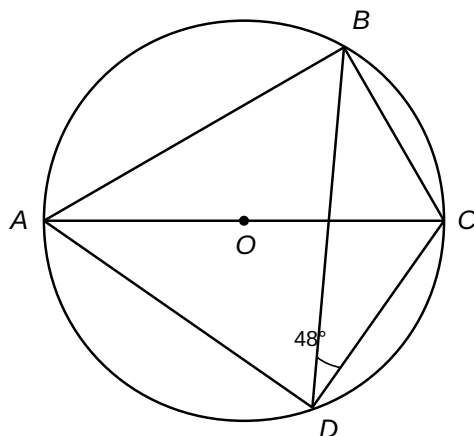


Diagram NOT accurately drawn

A , B , C , and D are points on the circumference of a circle, centre O .

AC is a diameter of the circle.

Angle $BDC = 48^\circ$.

Work out the size of angle BCA .

You must give reasons for each stage of your working.

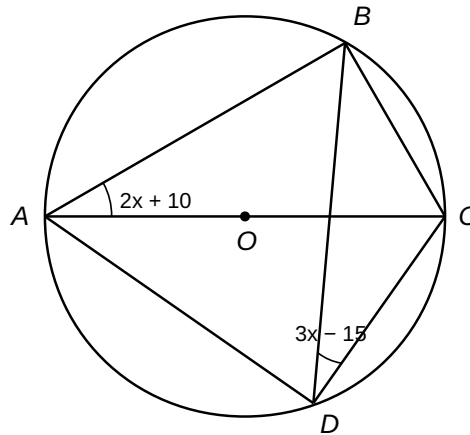
CHALLENGE

Diagram NOT accurately drawn

A, B, C, and D are points on the circumference of a circle, centre O.

AC is a diameter of the circle.

Angle BAC = $2x + 10$ and Angle BDC = $3x - 15$.

Work out the size of angle BCA.

You must give reasons for each stage of your working.

ANSWERS & WORKED SOLUTIONS**I Do**

Step 1: Identify the arc that both angles subtend. Both angle BAC and angle BDC subtend arc BC.

Step 2: Apply the circle theorem: Angles subtended by the same arc at the circumference are equal (Angles in the same segment).

Step 3: Therefore, Angle BDC = Angle BAC. **Answer:** 35°

We Do

Step 1: Both angle BAC and angle BDC subtend arc BC.

Step 2: Apply the circle theorem: Angles in the same segment are equal.

Step 3: Therefore, Angle BDC = Angle BAC. **Answer:** 62°

You Do 1

Step 1: Identify the arc that both angles subtend. Both angle BCA and angle BDA subtend arc AB.

Step 2: Apply the circle theorem: Angles in the same segment are equal.

Step 3: Therefore, Angle BDA = Angle BCA. **Answer:** 24°

ANSWERS & WORKED SOLUTIONS (CONTINUED)

You Do 2

Step 1: Angle BAC = Angle BDC = 48° (Angles in the same segment are equal).

Step 2: Angle ABC = 90° (Angle in a semicircle is a right angle, as AC is a diameter).

Step 3: In triangle ABC, angles sum to 180° . Angle BCA = $180^\circ - 90^\circ - 48^\circ$. **Answer: 42°**

Challenge

Step 1: Angle BAC = Angle BDC (Angles in the same segment are equal).

Step 2: Set up the equation: $3x - 15 = 2x + 10$.

Step 3: Solve for x: $x = 25$.

Step 4: Substitute x back in to find Angle BAC: $2(25) + 10 = 60^\circ$.

Step 5: Angle ABC = 90° (Angle in a semicircle is a right angle).

Step 6: Find Angle BCA: $180^\circ - 90^\circ - 60^\circ$ (Angles in a triangle sum to 180°). **Answer: 30°**