BennettMaths
Engaging Learners

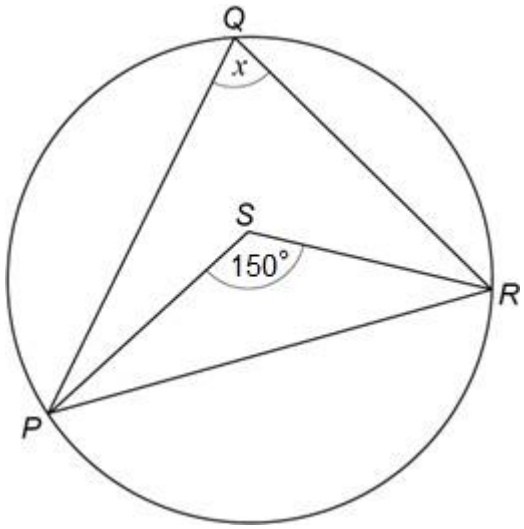
AQA

Name: _____

BennettMaths AQA 2H – Part 3

20 (a) *P*, *Q* and *R* are points on a circle.

S is a point inside triangle *PQR*.



Not drawn accurately

Assume that *S* is the centre of the circle.

Work out the size of angle *x*.

[1 mark]

$x =$ _____ °

20 (b) In fact, *S* is not the centre of the circle.

What does this mean about the size of angle *x* ?

Tick **one** box.

[1 mark]

☐ It is the same as the answer to part (a)

☐ It is greater than the answer to part (a)

☐ It is smaller than the answer to part (a)

☐ It could be bigger or smaller than the answer to part (a)

Do not write outside the box

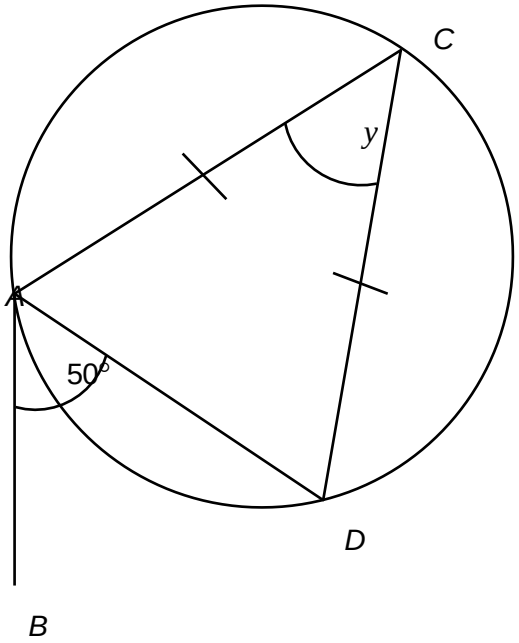
20 (c) For a different circle,

AB is a tangent at *A*

C and *D* are on the circumference of the circle

AC = *CD*

Not drawn accurately



Here is Ollie's method to work out the size of angle *y*.

Angle *ADC* = 50° (alternate angles are equal)

Angle *CAD* = 50° (angles in an isosceles triangle)

Therefore $y = 80°$ (angles in a triangle)

Is he correct?

Give a reason for your answer.

[1 mark]

3

Do not write outside the box

21 Asmae decides to put £2500 into an account that pays compound interest.

She wants to have **at least** £3200 in the account after 5 years.

Work out to 1 decimal place the **minimum** annual interest rate she needs.

[3 marks]

Answer _____ %

Do not write outside the box

22 An approximate value of a root of an equation, x, can be found using the iterative formula

$$x_{n+1} = \sqrt[3]{7(x_n)^2 - 4x_n - 5}$$

The starting value is $x_1 = 5$

22 (a) Work out the values of x_2 and x_3

[2 marks]

$x_2 =$ _____

$x_3 =$ _____

22 (b) By continuing the iteration, show that the value of x is more than 5.85

[1 mark]

Turn over for the next question

6

Do not write outside the box

23 Here are three sets of cards.

Set A	1	2	3	3	6	6	6	8	8	8
Set B	1	1	2	4	7	7	8	8	10	10
Set C	3	3	3	6	6	7	8	8	9	

In a game, a player has two options.

Option 1
Pick two cards from Set A

Option 2
Pick one card from Set B
and
pick one card from Set C

The cards are picked at random.

The player wins if the total of their two cards is exactly 12

Which option gives a better chance of winning?

Option 1 ☐ Option 2 ☐

Show working to support your answer.

[4 marks]

Do not write outside the box

24 a = 45 to the nearest integer

b = 70 to 1 significant figure

Work out the **upper bound** for $6a^2 - b^2$

You **must** show your working.

[3 marks]

Answer _____

Turn over for the next question

4

Do not write outside the box

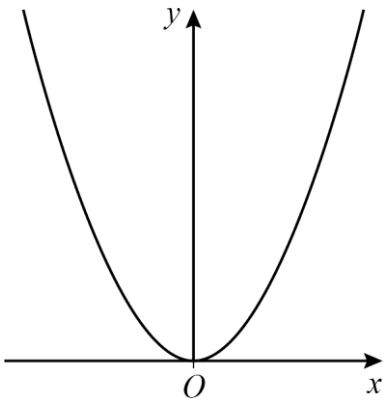
25 Show that $\frac{x-7}{x-4} + \frac{x+7}{x+4}$

simplifies to $\frac{ax^2-b}{x^2-16}$ where a and b are integers.

[3 marks]

Do not write outside the box

26 Here is a sketch of $y = x^2$



26 (a) The minimum point of $y = x^2$ is at (0, 0)

Write down the coordinates of the minimum point of $y = x^2 - 3$

[1 mark]

Answer (_____ , _____)

26 (b) The graph $y = x^2$ is reflected in the line $y = 1$

Write down the equation of the graph after this transformation.

[1 mark]

Answer _____

26 (c) $y = x^2$ is now transformed to give $y = (x - 2)^2$

Describe fully this single transformation.

[2 marks]

_____

_____

END OF QUESTIONS

6