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GCSE

Mathematics Revision

Twenty-One Today #1

You have thirty-five minutes to answer 21 questions

Marks Available : 40

GCSE Mathematics
Twenty-One Today

Question 1

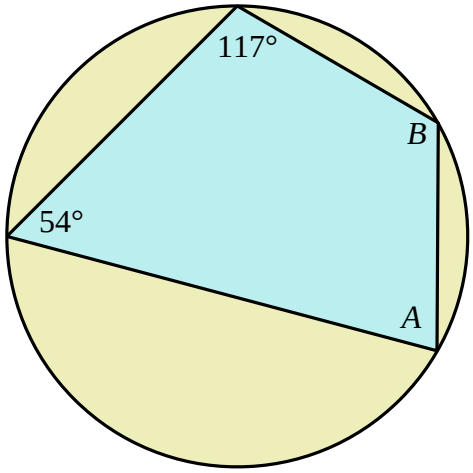
Consider the function;

$$f(x) = \frac{7x^2 + 5}{2}$$

Determine $f(-1)$

[1 mark]

Question 2



A Cyclic Quadrilateral is shown.
Write down the size of;

(i) Angle *A*

[1 mark]

(ii) Angle *B*

[1 mark]

Question 3

What distance does a car 'cruising' down the motorway at 70 mph for 1 hour and 20 minutes cover ?
Give your answer in miles, to the nearest mile.

[2 marks]

Question 4

(i) What is “Half of two plus two” ?

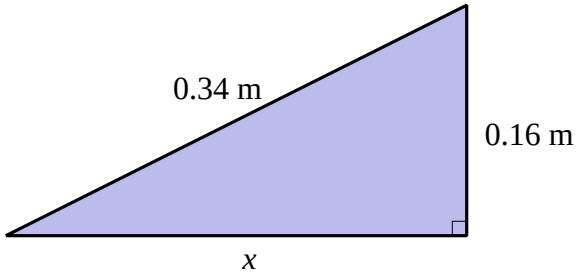
[1 mark]

(ii) What is “Six divided by half” ?

[1 mark]

Question 5

Use the mighty theorem of Pythagoras to calculate the length of the side marked x.
Give your answer in metres.



[2 marks]

Question 6

(i) The point (4, − 7) is reflected in the x axis.
What are the coordinates of the reflection ?

[1 mark]

(ii) After reflection in the y-axis, a point has coordinates (8, 5).
What were the coordinates of the point ?

[1 mark]

(iii) Give the coordinates of a point which is its own reflection in the mirror line with equation $y = 6$

[1 mark]

Question 7

Write down the value of x, y and z that make each of the following equations true,

(i) $9 = 9^x$ **(ii)** $\frac{1}{9} = 3^y$ **(iii)** $9 = 81^z$

[3 marks]

Question 8

Write the number 78328 in standard form.

[1 mark]

Question 9

Consider the function;

$$f(x) = 4x - 9$$

Write down an expression for the inverse function, $f^{-1}(x)$

[1 mark]

Question 10

Liza has 7 questions incorrect out of 20 in a mathematics test.
Each question is worth 1 mark.
Express her score as a percentage.

[1 mark]

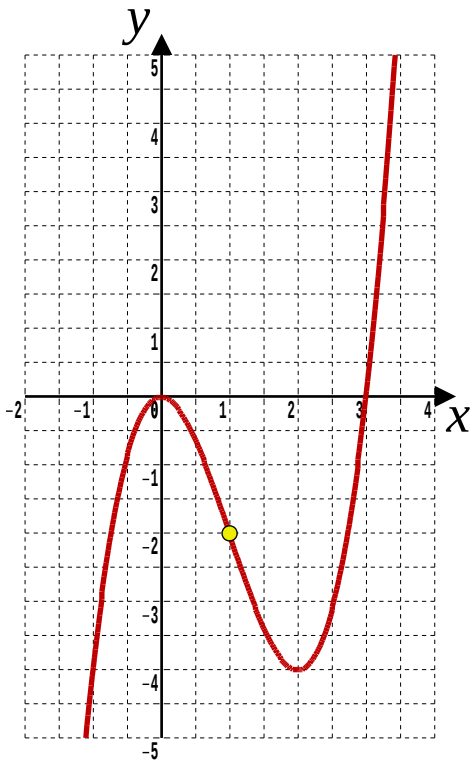
Question 11

Simplify, $\frac{x^2 - 25}{x + 5}$

[1 mark]

Question 12

The curve on the graph below has equation, $y = x^3 - 3x^2$



(i) Write down an expression for the gradient equation of the curve

[1 mark]

(ii) Calculate the value of the gradient of the curve at the point $(1, -2)$

[1 mark]

(iii) Determine the equation of the tangent to the curve at the point $(1, -2)$

[2 marks]

(iv) Draw your part (iii) answer of the graph above.

[1 mark]

Question 13

Given that, $f(x) = 2^x$, determine the value of x for which $f(x) = 8$

[1 mark]

Question 14

Consider the straight line;

$$y = 0.5x + 7$$

Write down the coordinates of the point where this line crosses the y-axis.

[1 mark]

Question 15

Consider the following number which is written in standard form;

$$4.76 \times 10^{-5}$$

Write this as an ordinary number.

[1 mark]

Question 16

(i) Factorise, $x^2 + 7x + 10$

[1 mark]

(ii) Hence solve the equation, $x^2 + 7x + 10 = 0$

[1 mark]

Question 17

In the space below sketch the "more is less"graph of inverse proportion, which has equation,

$$y = \frac{1}{x}$$

[1 mark]

Question 18

Simplify, $\left(100\,x^{6}\right)^{-0.5}$

[2 marks]

Question 19

As an example, 20 when written as a product of primes is $20 = 2 \times 2 \times 5$

(i) What does the word “product” mean ?

[1 mark]

(ii) Write 225 as a product of primes.

[1 mark]

Question 20

Solve the following pair of simultaneous equations:

$$3x - 2y = 2$$
$$x + y = 9$$

[4 marks]

21 Today !

Calculate;

$$1 + 2 + 3 + 4 + 5 + 6 + 7 + \ldots + 98 + 99 + 100$$

[2 marks]