AQA GCSE Mathematics Calculator 2024 Higher Paper 3 Revision Worksheet

Question 10

On a biased dice,

P(lands on 6) = 0.38

This dice is rolled 150 times.

How many times would you expect the dice **not** to land on 6?

Question 11

Write a number in each box to make the calculations correct.

10	÷	−2	×		=	5		

$\frac{1}{3}$	×		×	6	=	8π		

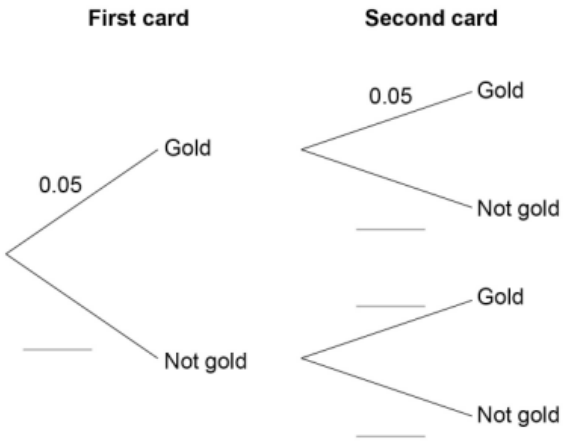
Question 12

Cards are either gold or not gold.

P(gold) = 0.05

Harim chooses a card at random and replaces it. He then chooses a second card.

12 (a) Complete the tree diagram.

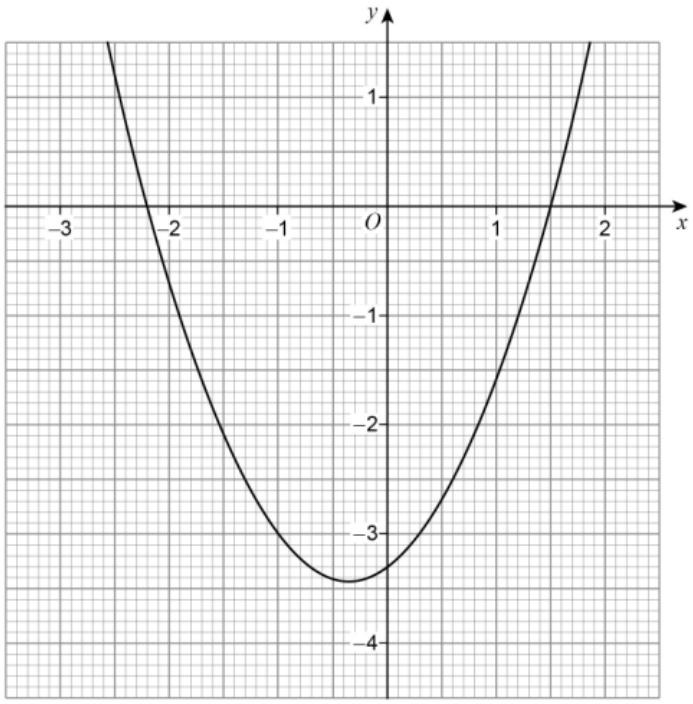


12 (b)

What is the probability that at least one of Harim's cards is gold?

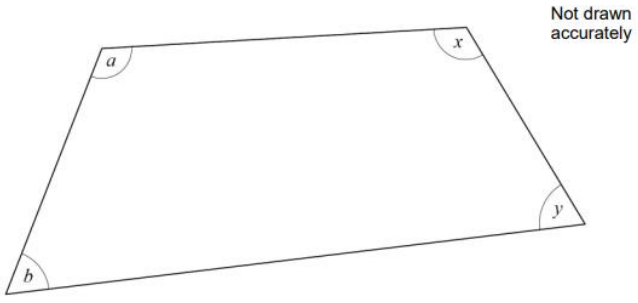
Question 13

Here is a quadratic graph with equation y = f(x)



Write down the roots of the equation f(x) = 0

Question 14



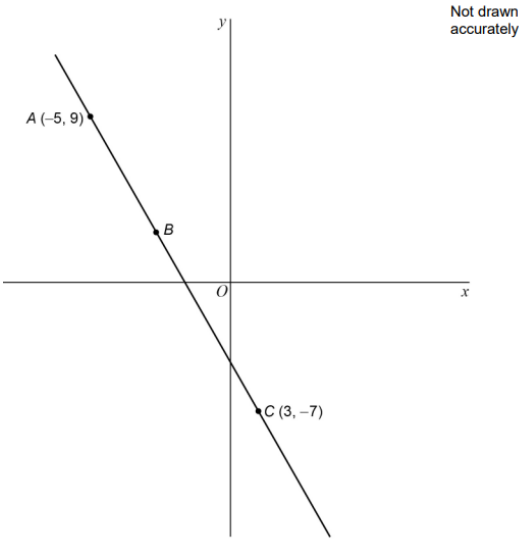
$b = 45°$ and $a : b = 7 : 3$ and $x : y = 4 : 1$

Show that $a : y = 5 : 2$

Question 15

A straight line passes through points A (–5, 9), B and C (3, –7).

15 (a)



AB : BC = 1 : 3

Work out the coordinates of point B.

15 (b)

Work out the equation of the line perpendicular to AC that passes through C.

Question 16

Jing rolls a fair six-sided dice 72 times.

	1	2	3	4	5	6
Frequency	16	11	10	8	14	13

Is the relative frequency of rolling a 5 greater than the theoretical probability? Tick a box. Yes ☐ No ☐

Give a reason for your answer.

Question 17

a and b are different prime numbers.

$a^3 \times b^2 = 200$

Work out the value of $a^4 \times b$

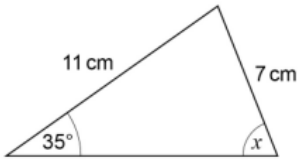
(b) c and d are different prime numbers.

Circle the equation for which $c^4 \times d^2 \times e$ is a cube number.

$e = cd$ $e = c^2d$ $e = c^2d^2$ $e = c^3d^3$

Question 18

Here is triangle A.

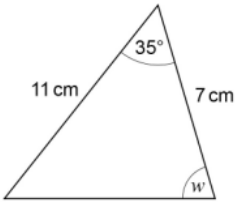


(a)

Use the sine rule to show that x = 64° to the nearest degree.

18 (b)

Here is triangle B



Anna thinks that w must be 64° to the nearest degree. She says,

"This is because triangle B has two sides and one angle the same as triangle A."

Without further calculation, is she correct? Tick a box. Yes ☐ No ☐

Give a reason for your answer.

Question 19

f(x) = x – 3 g(x) = 4x – 7

(a) Work out the value of fg(6)

(b) Solve (f(x))^2 = g(x)

Question 20

P, Q, and R have positive values.

P is directly proportional to Q. When P = 8, Q = 2

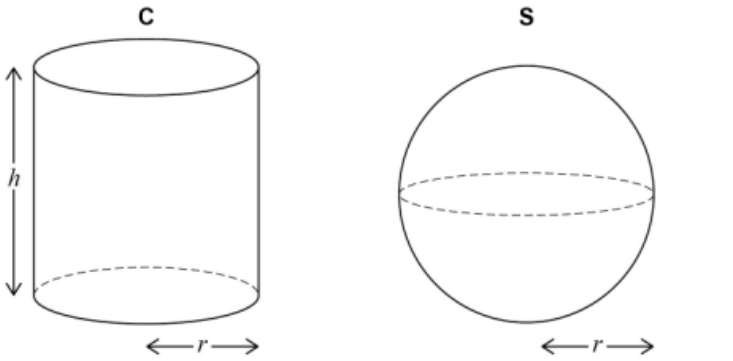
R is inversely proportional to Q^2. When R = 10, Q = 3

Work out the value of R when P = 0.5

Question 21

A cylinder, C, and a sphere, S, each have radius r C has height h

21 (a)



Volume of a sphere = $\frac{4}{3}\pi r^3$

where r is the radius

volume of C = volume of S

Work out the ratio r : h. You must show your working.

21 (b)

A different cylinder has radius 3r and height 2h.

How many times bigger is the volume of this cylinder than the volume of C?