

AQA GCSE Mathematics Calculator 2024 Higher Paper 3 Revision Worksheet

Question 10

On a biased dice,

$$P(\text{lands on 6}) = 0.38$$

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.

$$\boxed{10} \div \boxed{-2} \times \boxed{} = \boxed{5}$$

$$\boxed{\frac{1}{3}} \times \boxed{} \times \boxed{6} = \boxed{8\pi}$$

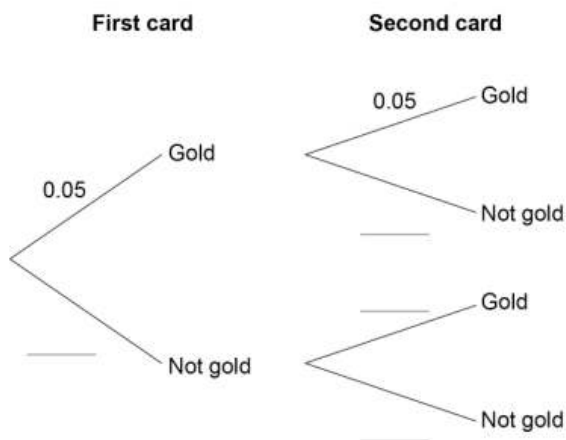
Question 12

Cards are either gold or not gold.

$$P(\text{gold}) = 0.05$$

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

12 (a) Complete the tree diagram.

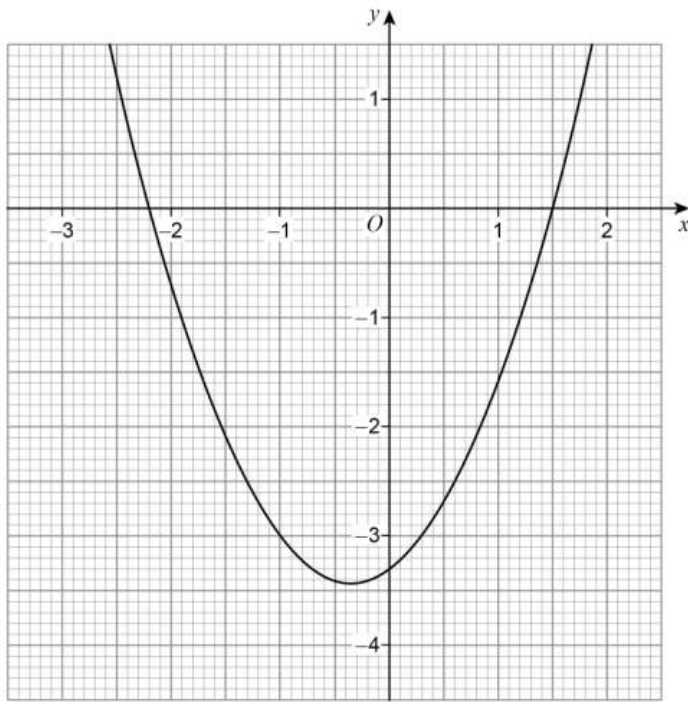


12 (b)

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

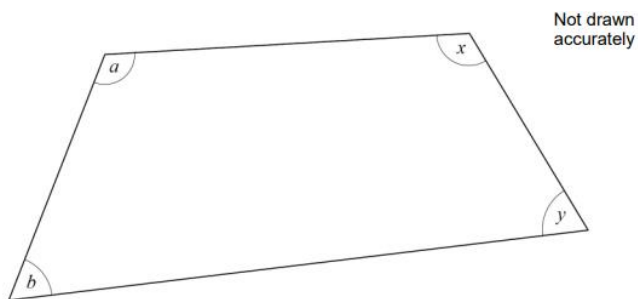
Question 13

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



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

Question 14



$b = 45^\circ$ and $a : b = 7 : 3$ and $x : y = 4 : 1$

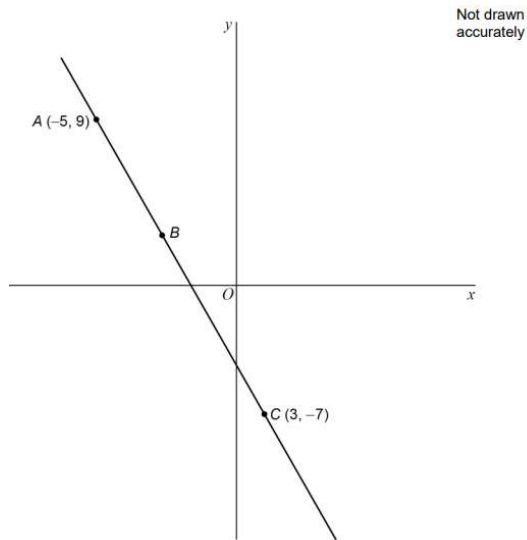
Show that $a : y = 5 : 2$

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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.

$$e = cd$$

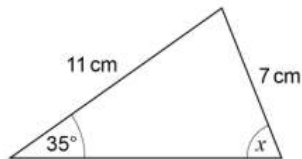
$$e = c^2d$$

$$e = c^2d^2$$

$$e = c^3d^3$$

Question 18

Here is triangle A.

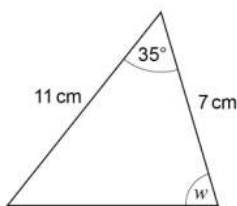


(a)

Use the sine rule to show that $x = 64^\circ$ 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

$$f(x) = x - 3 \quad g(x) = 4x - 7$$

(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 $P = 8$, $Q = 2$

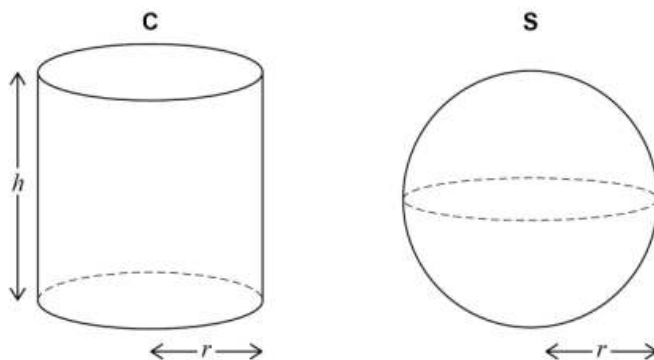
R is inversely proportional to Q^2 . When $R = 10$, $Q = 3$

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)



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

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?