

- 10 Two circles, C_1 and C_2 , are drawn on a centimetre grid, with a scale of 1 cm for 1 unit on each axis.

The centre of circle C_1 is at the point with coordinates $(-1, 3)$ and the radius of C_1 is 13 cm.

The centre of circle C_2 is at the point with coordinates $(7, 18)$ and the radius of C_2 is 6 cm.

- (a) Work out the distance between the centre of C_1 and the centre of C_2

..... cm
(3)

- (b) Explain why circle C_1 intersects circle C_2

.....
.....
(1)

(Total for Question 10 is 4 marks)



11 (a) Factorise $9x^2 - 4y^2$

.....
(2)

(b) Express $\frac{7}{8} - \frac{x+3}{4x}$ as a single fraction in its simplest form.

.....
(3)

(Total for Question 11 is 5 marks)

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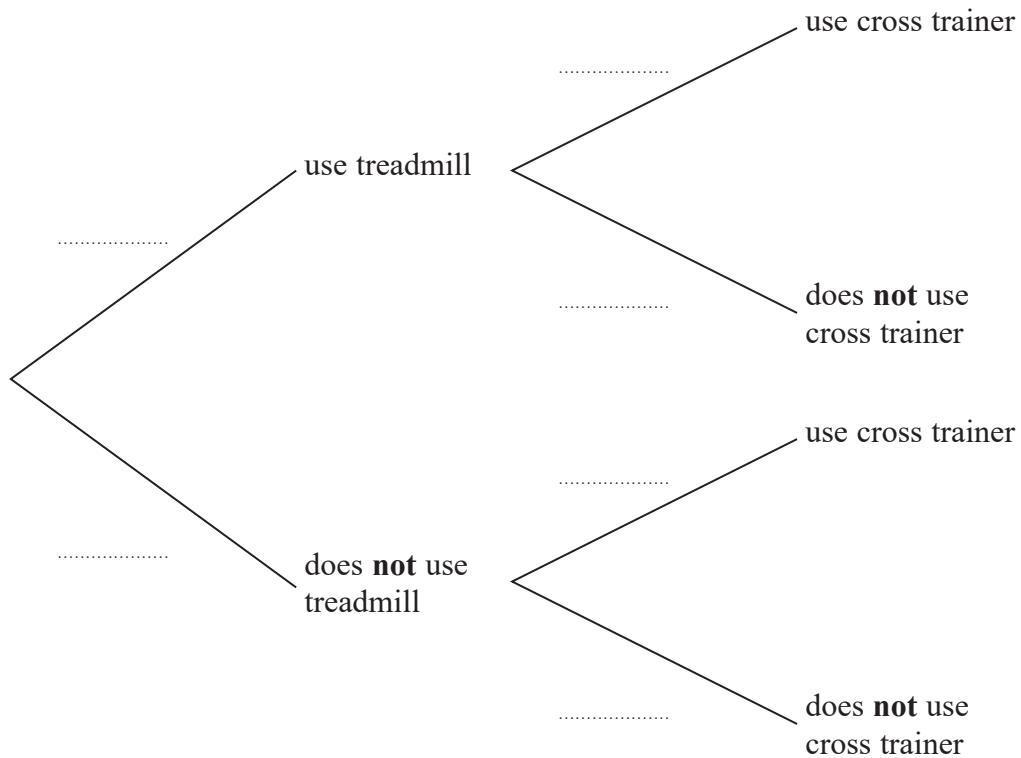
12 Rudolf goes to the gym.

The probability that he will use the treadmill is 0.8

When he uses the treadmill, the probability that he will use the cross trainer is 0.3

When he does **not** use the treadmill, the probability that he will use the cross trainer is 0.6

(a) Complete the probability tree diagram for this information.



(2)

(b) Work out the probability that Rudolf uses both the treadmill and the cross trainer.

.....
(2)

(Total for Question 12 is 4 marks)



- 13 Antoine is going on holiday.
He makes 3 separate payments to cover the total cost of his holiday.

The following table shows how much money Antoine pays to the holiday company.

Payment	Amount paid
Payment 1	$\frac{3}{8}$ of the total cost
Payment 2	45% of the total cost
Payment 3	\$406

Work out how much Antoine has to pay for Payment 2

\$

(Total for Question 13 is 5 marks)



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14 The function f is defined as

$$f: x \mapsto \frac{2x}{x-6} \quad x \neq 6$$

(a) Find $f(10)$

.....
(1)

(b) Express the inverse function f^{-1} in the form $f^{-1}: x \mapsto \dots$

$f^{-1}: x \mapsto \dots$
(3)

(Total for Question 14 is 4 marks)



- 15 Abraham is going to play a computer game.
Abraham can win the game, draw the game or lose the game.

For any game that Abraham plays

the probability that he wins the game is 0.3
the probability that he draws the game is 0.5
the probability that he loses the game is 0.2

When Abraham wins a game, he scores +10 points.

When Abraham draws a game, he scores 0 points.

When Abraham loses a game, he scores -5 points.

Abraham plays 3 games and the points he scores in each of the 3 games are added together to get his total score.

Work out the probability that when he has played 3 games his total score is 0 points.

.....
(Total for Question 15 is 4 marks)



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- 16 Without using a calculator, show that $\frac{12}{\sqrt{2}-1} - (\sqrt{2})^5 = 2\sqrt{32} + 12$
Show your working clearly.

(Total for Question 16 is 3 marks)



- 17 A particle P moves along a straight line.
The fixed point O lies on this line.

The displacement of P from O at time t seconds, $t \geq 1$, is s metres where

$$s = 4t^2 + \frac{125}{t}$$

The velocity of P at time t seconds, $t \geq 1$, is v m/s

Work out the distance of P from O at the instant when $v = 0$

..... m

(Total for Question 17 is 5 marks)

