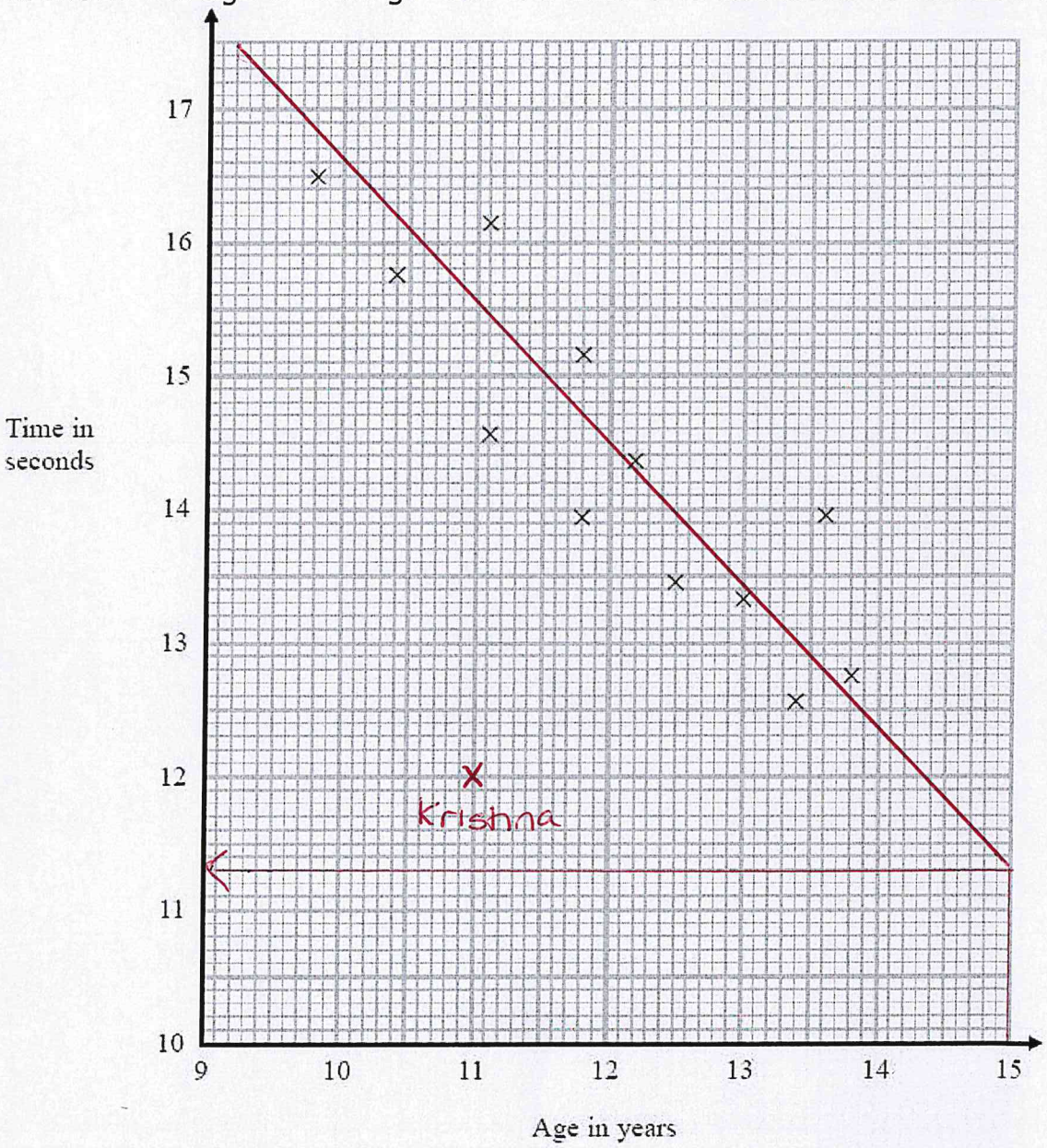
Calculator Overlap questions June 18 Paper 3

Answers

1/19 The scatter diagram shows information about 12 girls.
It shows the age of each girl and the best time she takes to run 100 metres.



(a) Write down the type of correlation.

negative (1)

Kristina is 11 years old. Her best time to run 100 metres is 12 seconds.
The point representing this information would be an outlier on the scatter diagram.
(b) Explain why.

The point for Kristina is a long way from the rest of the data points. (1)

Debbie is 15 years old. Debbie says:
"The scatter diagram shows I should take less than 12 seconds to run 100 metres."
(c) Comment on what Debbie says.

This is unreliable as it is extrapolating. It is beyond where the data was collected. (1)

2/20 Expand and simplify $5(p + 3) - 2(1 - 2p)$

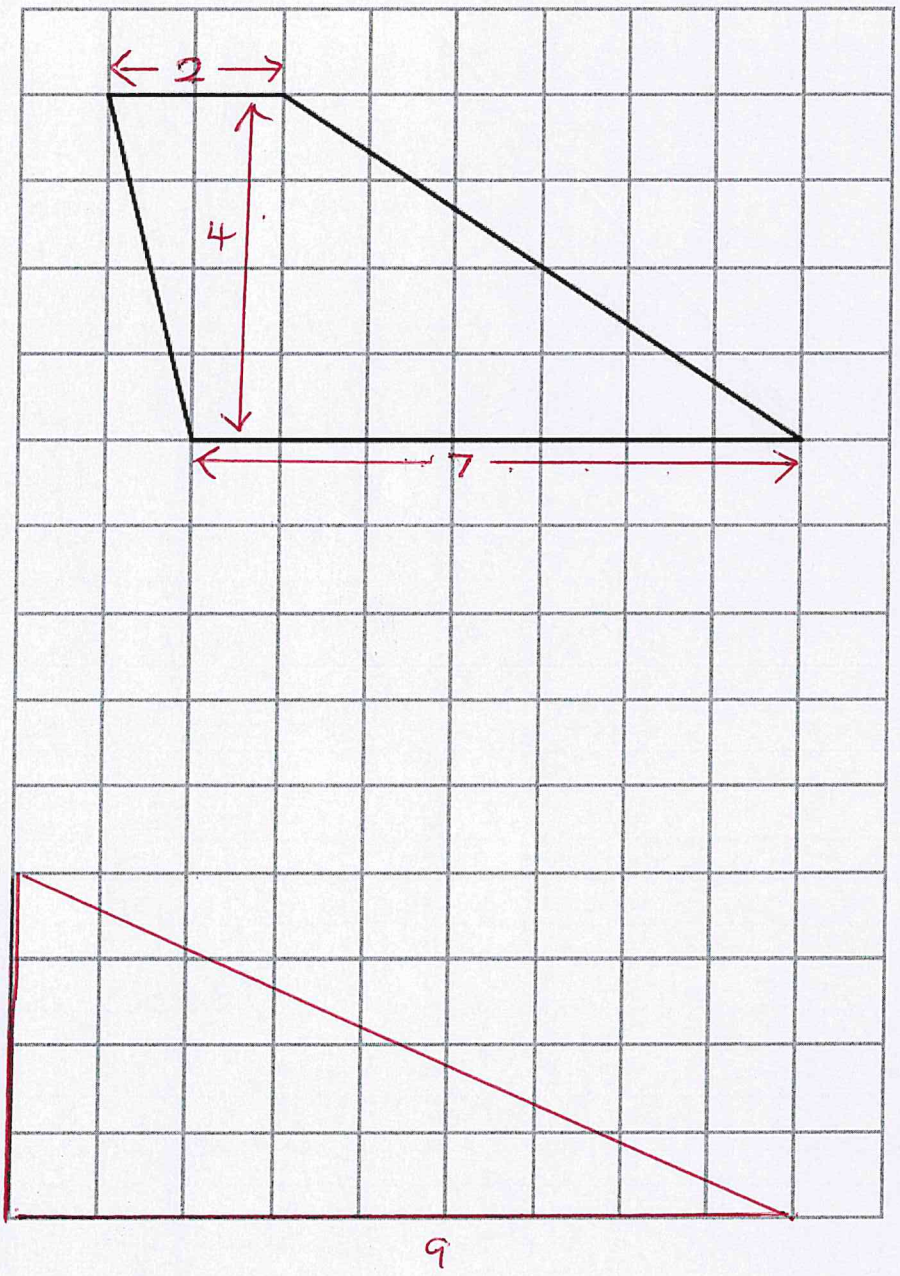
$5p+13 \quad -2 +4p$

$=9p+13$

$9p+13$

(2)

3/21 Here is a trapezium drawn on a centimetre grid.



Area

$=\frac{2+7}{2} \times 4$

$= 18cm^2$

$\Delta = \frac{1 \times 36}{2}$

$18 = \frac{2 \times 18}{2}$

$18 = \frac{3 \times 12}{2}$

$18 = \frac{4 \times 9}{2}$

$18 = \frac{6 \times 6}{2}$

On the grid, draw a triangle equal in area to this trapezium.

(2)

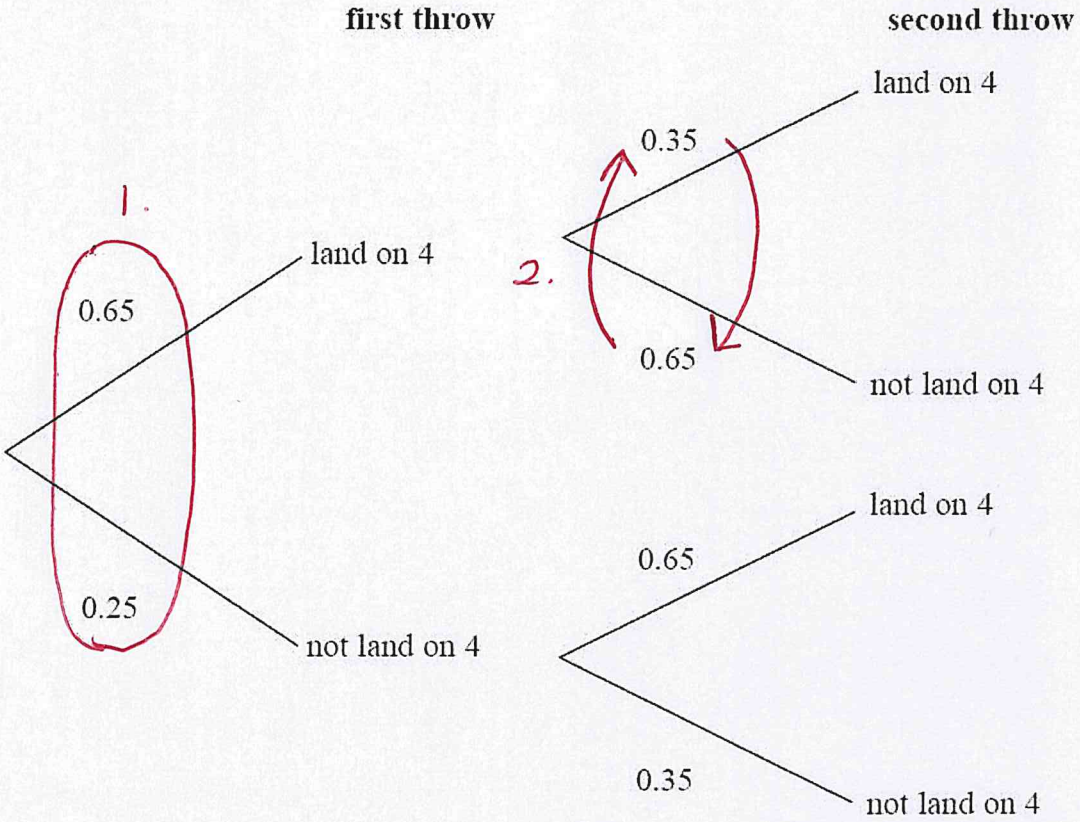
9 by 4 12 by 3 18 by 2 36 by 1 6 by 6

4/22 When a biased 6-sided dice is thrown once, the probability that it will land on 4 is 0.65

The biased dice is thrown twice.

Amir draws this probability tree diagram.

The diagram is **not** correct.



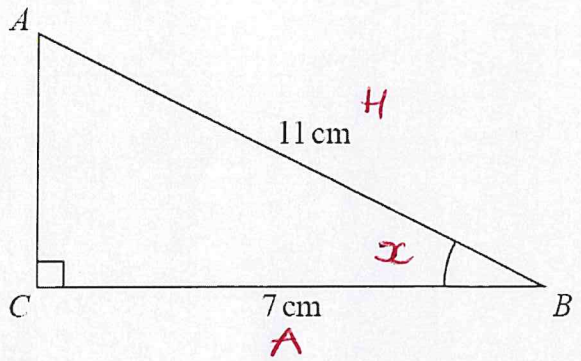
Write down **two** things that are wrong with the probability tree diagram.

1 The probabilities on the first pair of branches do not add up to 1.

2 On the second set of branches the decimals are on the wrong way round.

(2)

5/23 *ABC* is a right-angled triangle.



(a) Work out the size of angle *ABC*. Give your answer correct to 1 decimal place.

$\cos x = \frac{7}{11}$

$x = \cos^{-1}\left(\frac{7}{11}\right)$

$x = 50.47880364$

50.5 ..... ° (2)

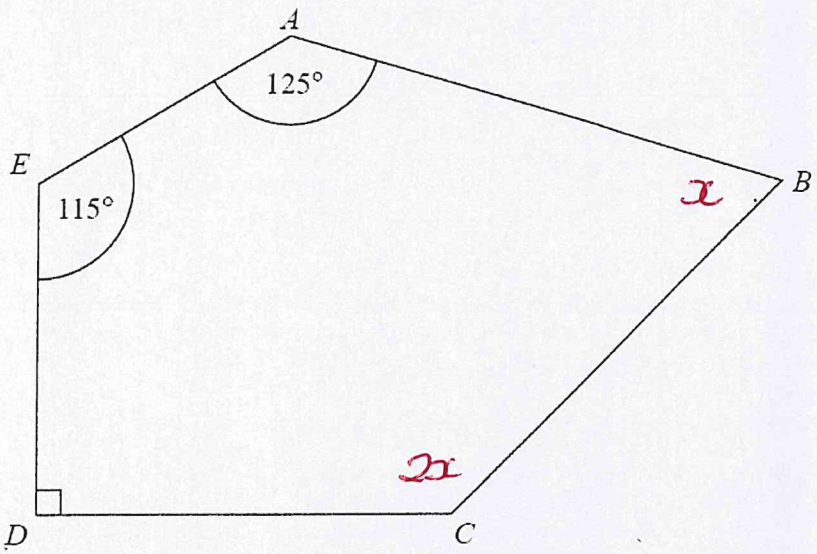
The length of the side *AB* is reduced by 1 cm.
The length of the side *BC* is still 7 cm.
Angle *ACB* is still 90°

(b) Will the value of cos *ABC* increase or decrease? You must give a reason for your answer.

$\cos x = \frac{7}{10} = 0.7$ which is less than $\frac{7}{11}$

so it will decrease ..... (1)

6/26 *ABCDE* is a pentagon.



Angle *BCD* = 2 × angle *ABC*
Work out the size of angle *BCD*.
You must show all your working.

Total $= 3 \times 180$
$= 540°$

$540 = 90 + 115 + 125 + x + 2x$

$540 = 3x + 330$

$210 = 3x$

$\frac{210}{3} = x$

$x = 70°$ $\angle BCD = 2c = 140°$ ..... °

(5)

7/24 There are some counters in a bag.
The counters are red or white or blue or yellow.
Bob is going to take at random a counter from the bag.
The table shows each of the probabilities that the counter will be blue or will be yellow.

Colour	red	white	blue	yellow	Total
Probability	$2x$	x	0.45	0.25	1.00

Counters 18

There are 18 blue counters in the bag.
The probability that the counter Bob takes will be red is twice the probability that the counter will be white.

(a) Work out the number of red counters in the bag.

$3x + 0.70 = 1.00$
$3x = 0.30$
$x = 0.10$
Red $= 2x = 0.20$

0.45 = 18 counters
0.05 = 2 counters
0.10 = 4 counters
0.20 = 8 counters

(4)

A marble is going to be taken at random from a box of marbles.
The probability that the marble will be silver is 0.5
There must be an even number of marbles in the box.
(b) Explain why.

If the probability is 1/2 then you must be able to divide the total by 2, so the total must be an even number.

(1)

8/25 Solve $\frac{5-x}{2} = 2x - 7$

$5 - x = 2(2x - 7)$
$5 - x = 4x - 14$
$19 = 5x$
$\frac{19}{5} = x$
$x = 3.8$

$x =$ 3.8

(3)