

M8 = 9 days to go!

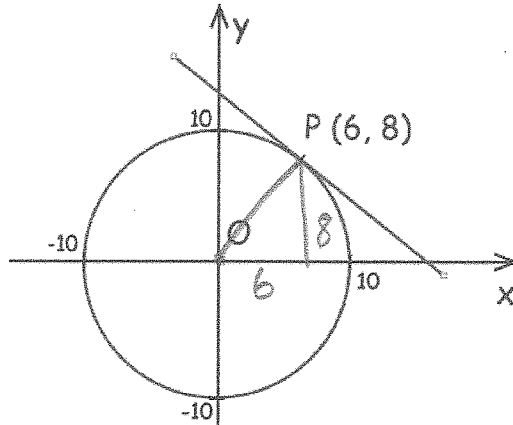
10 Change the recurring decimal $0.727272\dots$ into a fraction in its simplest form.

$$\begin{aligned}
 x &= 0.727272 \\
 100x &= 72.7272 \\
 \hline
 99x &= 72 \\
 x &= \frac{72}{99} = \frac{8}{11}
 \end{aligned}$$

digits after d. point need to be the same

Answer $\frac{8}{11}$ [2]

5. Here is a circle, centre O, and the tangent to the circle at the point (6, 8).



Find the equation of the tangent at the point P.

Find gradient of radius $\rightarrow \frac{\text{Rise}}{\text{Run}}$

$$\frac{8}{6} = \frac{4}{3}$$

$$y = \frac{3}{4}x + 12.5 \quad (3)$$

Gradient of tangent $\frac{1}{\text{gradient of radius}}$

$$m = -\frac{3}{4} \quad (6, 8) \quad \text{so } y = -\frac{3}{4}x + c$$

$$8 = -\frac{3}{4} \times 6 + c$$

$$8 + 4.5 = c$$

$$12.5 = c$$

$$y = -\frac{3}{4}x + 12.5$$

Solve the equations

$$x^2 + y^2 = 20$$

$$x + y = 6$$

$$x = 6 - y$$

rearrange

Sub $x = 6 - y$ into $x^2 + y^2 = 20$

$$(6 - y)^2 + y^2 = 20$$

$$(6 - y)(6 - y)$$

$$36 - 6y - 6y + y^2$$

$$36 - 12y + y^2$$

$$36 - 12y + y^2 + y^2 = 20$$

$$2y^2 - 12y + 36 - 20 = 0$$

$$2y^2 - 12y + 16 = 0$$

$$\div 2 \quad y^2 - 6y + 8 = 0$$

$$(y - 4)(y - 2) = 0$$

$$y = 4 \text{ or } y = 2$$

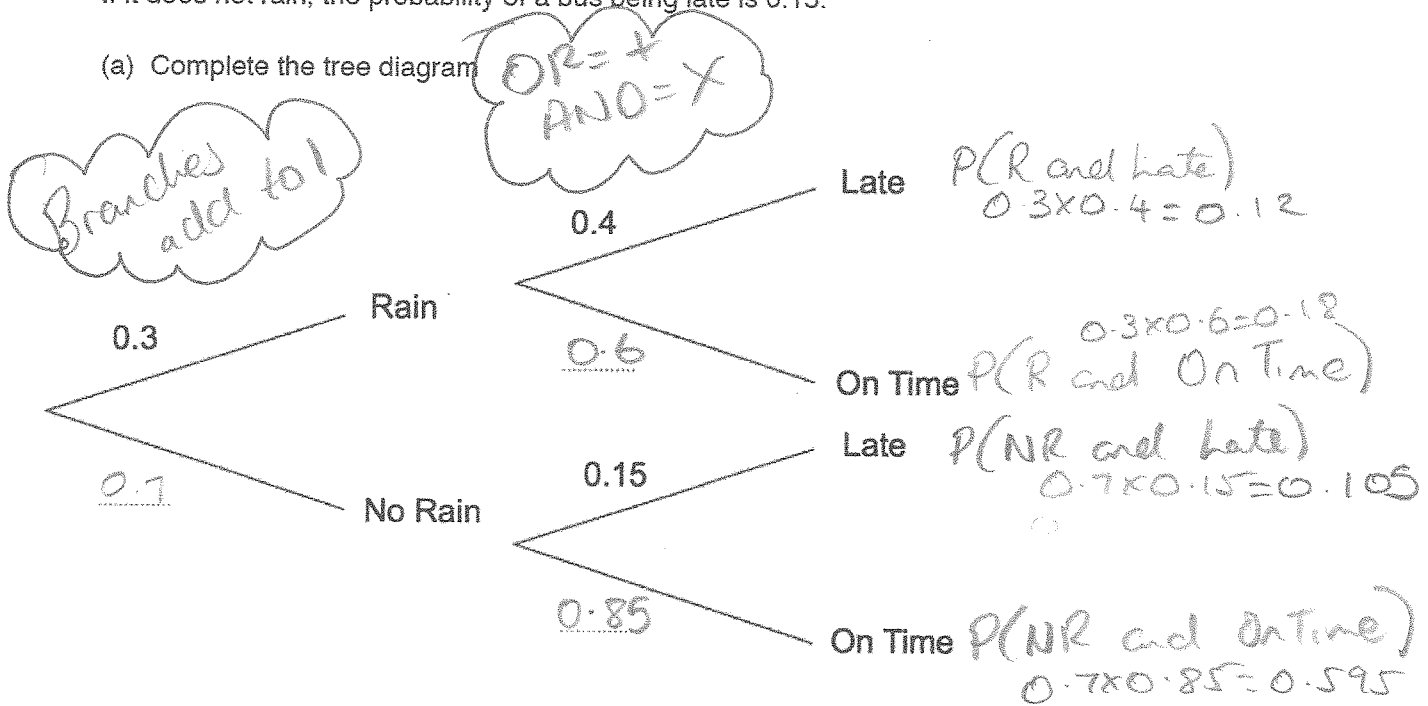
6. In a small village, one bus arrives a day.

The probability of rain in the village is 0.3.

If it rains, the probability of a bus being late is 0.4.

If it does not rain, the probability of a bus being late is 0.15.

(a) Complete the tree diagram



(b) Work out the number of days the bus will be late over a period of 80 days.

(2) All should add to 1

$$P(R \text{ and late}) \text{ OR } P(\text{No Rain and late})$$

$$0.12 + 0.105 = 0.225$$

$$\begin{array}{r} 0.12 \\ 0.18 \\ 0.105 \\ + 0.595 \\ \hline 1 \end{array}$$