

8. Solve the following quadratic equation, giving your answers correct to one decimal place.

$$w^2 + 3w - 8 = 0$$

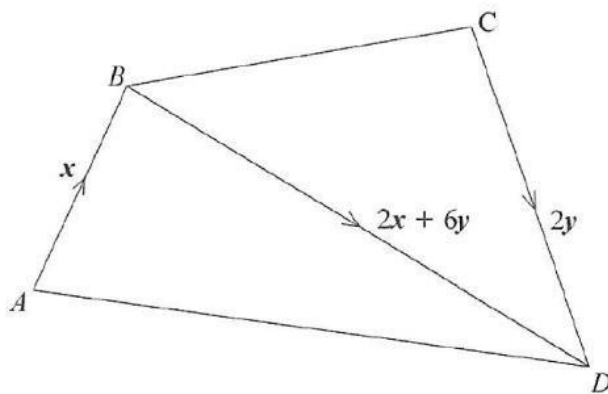
[5]

Quadratic Formula Equation after substituting a, b and c

$$w = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$w = \quad \text{or} =$$

8. In the diagram, $\vec{AB} = x$, $\vec{BD} = 2x + 6y$, and $\vec{CD} = 2y$.



NOT TO SCALE

- (a) Express in terms of x and y in simplest form
- (i) \vec{AD} , [3]
- (ii) \vec{BC} . [3]
- (b) Write **two** geometrical properties of \vec{AD} and \vec{BC} . [2]
8. The equation of a curve is $y = 8 + 2x - 3x^2$:
- (a) Find $\frac{dy}{dx}$. [2]
- (b) Calculate the gradient of the curve at $(-1, 3)$. [1]
- (c) Hence, write down the equation of the tangent to the curve at the point $(-1, 3)$. [3]

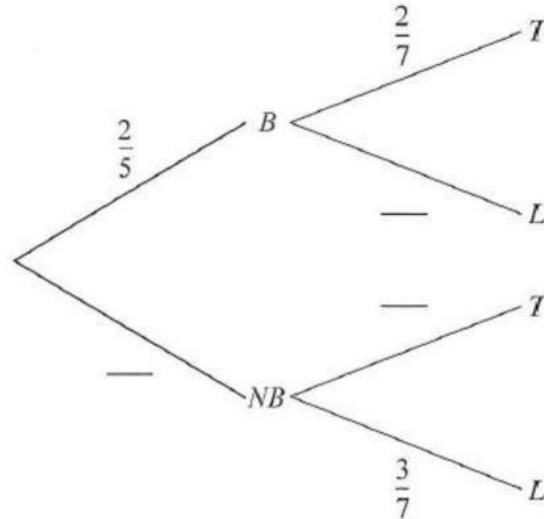
$$y = \quad x +$$

8. The probability Adrian has breakfast (B) is $\frac{2}{5}$.

If he has breakfast, the probability that he arrives at work in time (T) is $\frac{2}{7}$.

If he does not have breakfast (NB), the probability that he arrives at work late (L) is $\frac{3}{7}$.

(a) Copy and complete the tree diagram below using the above information. [3]

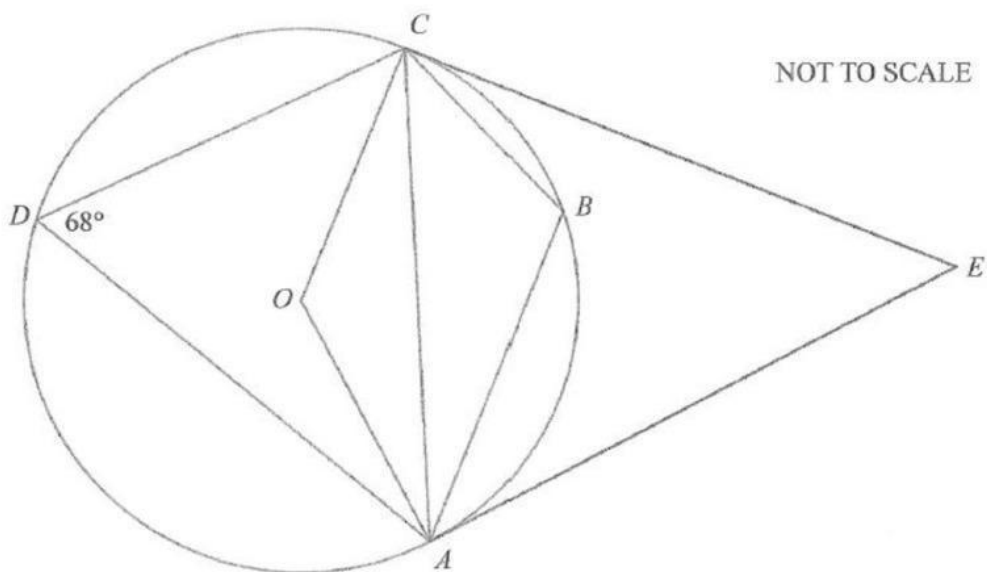


(b) Find the probability that Adrian

(i) has breakfast and arrives at work in time, [2]

(ii) arrives at work late. [3]

8.



In the above diagram, O is the centre of the circle.

AE and CE are tangents.

Find the size of the following angles:

- (a) \hat{COA} [1]
 (b) \hat{CBA} [1]
 (c) \hat{OAE} , giving a reason for your answer [2]

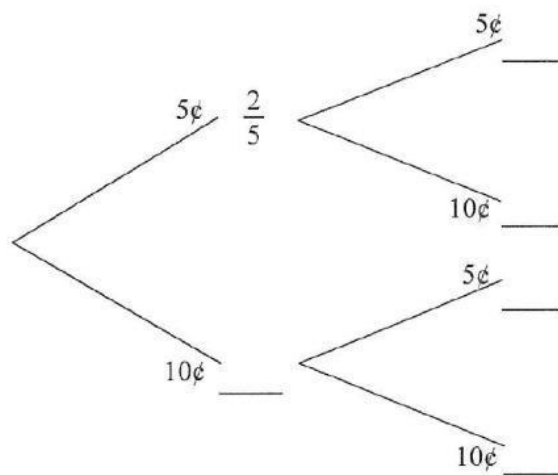
- (d) \hat{CAE} [1]
 (e) \hat{AEC} [1]

8. Make m the subject of the formula $b = \frac{1 - am^2}{1 + m^2}$ [5]

$$m = \pm \sqrt{\frac{1 - b}{1 + b}}$$

8. Julie has two 5¢ and three 10¢ coins in her pocket. She takes out two coins at random, one after the other without replacement.

- (a) Copy and complete the tree diagram below to show the possible outcomes.



[3]