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

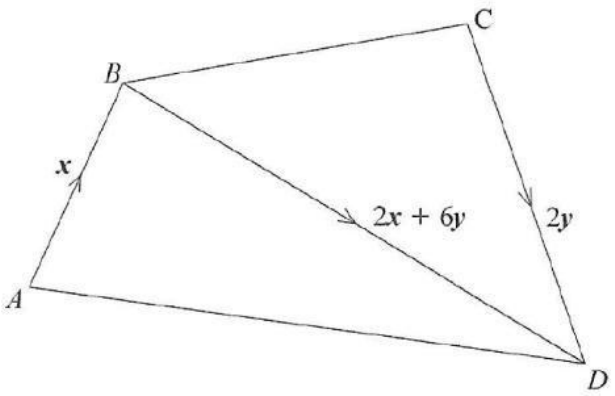
$$w^2 + 3w - 8 = 0$$ [5]

Quadratic Formula Equation after substituting a, b and c

$$w = \frac{\pm\sqrt{\qquad\qquad}}{\qquad\qquad}$$

w = or =

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



NOT TO SCALE

(a) Express in terms of x and y in simplest form

(i) $\overrightarrow{AD}$, [3]

(ii) $\overrightarrow{BC}$. [3]

(b) Write **two** geometrical properties of $\overrightarrow{AD}$ and $\overrightarrow{BC}$. [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 = x +

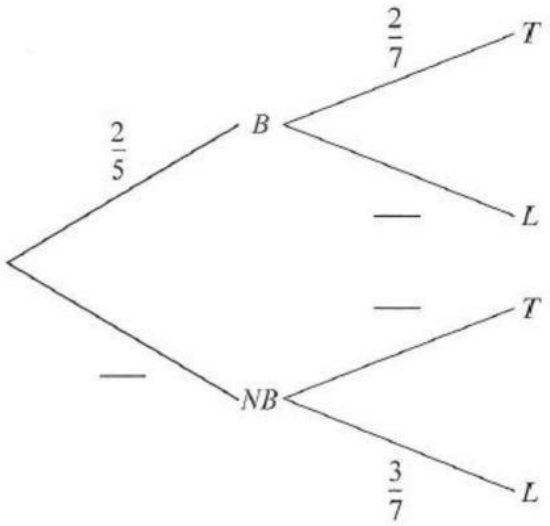
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8. The probability Adrian has breakfast (B) is $\frac{2}{5}$.

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]

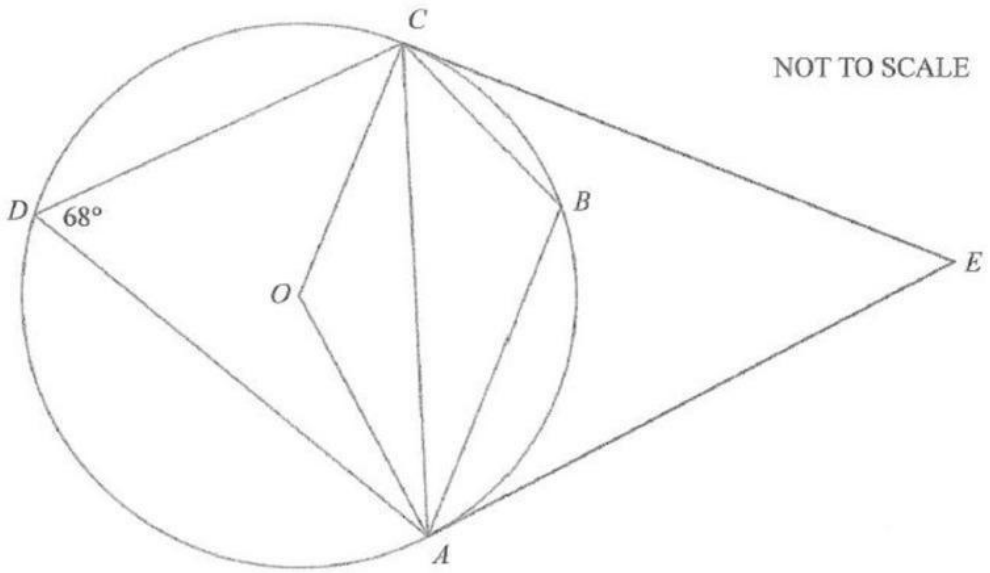


(b) Find the probability that Adrian

(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:

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(a) $C\hat{O}A$ [1]

(b) $C\hat{B}A$ [1]

(c) $O\hat{A}E$, giving a reason for your answer [2]

(d) $C\hat{A}E$ [1]

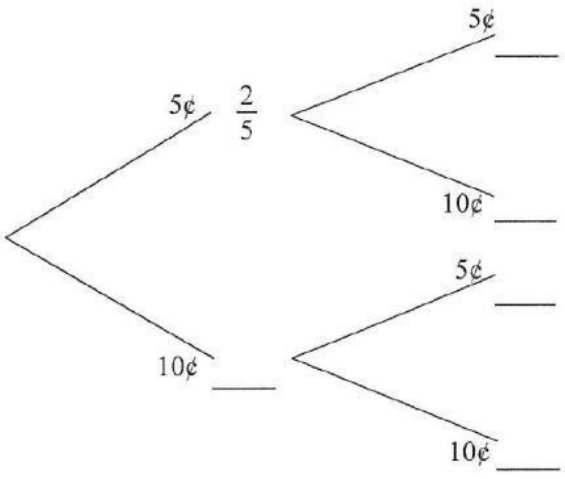
(e) $A\hat{E}C$ [1]

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

$m = \pm\sqrt{}$

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]

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