Simple Algebraic Equations, Simultaneous Linear Equations, Quadratic Equations

Question 1 <u>M/J 10 P11 Q24</u>

(a) Solve

(i) $5 - 2(3x - 1) = 2x + 1$,

Answer (a)(i) $x =$ .... [2]

(ii) $\dfrac{2}{5t} = \dfrac{3}{4}$.

Answer (a)(ii) $t =$ .... [2]

(b) Solve the simultaneous equations

$$5x - 2y = 16,$$
$$2x - 3y = 13.$$

Answer (b) $x =$ ....

$y =$ .... [3]

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Question 2 M/J 10 P12 Q13

Solve the simultaneous equations.

$$3x + 2y = 7$$
$$x - 3y = 17$$

Answer $x =$ ....

$y =$ ....[3]

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(a) Solve $\dfrac{3}{x-1} = 2$.

Answer *(a)* $x =$ ....[1]

(b) Given that $p = 2t - r$, **express** t in terms of p and r.

Answer *(b)* $t =$ .... [1]

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Question 4 M/J 10 P22 Q8

Ahmed throws a ball to John.
The ball travels 10 metres at an average speed of x metres per second.

(a) Write an expression, in terms of x, for the time taken, in seconds, for the ball to travel from Ahmed to John. [1]

(b) John then throws the ball to Pierre.
The ball travels 15 metres.
The ball's average speed is 0.5 metres per second greater than the ball's average speed from Ahmed to John.

Write an expression, in terms of x, for the time taken, in seconds, for the ball to travel from John to Pierre. [1]

(c) The time taken between John catching the ball and then throwing it to Pierre is 2 seconds.
The total time taken for the ball to travel from Ahmed to Pierre is 7 seconds.

Write down an equation in x, and show that it simplifies to

$$2x^2 - 9x - 2 = 0.$$ [3]

(d) Solve the equation $2x^2 - 9x - 2 = 0$, giving each answer correct to 2 decimal places. [4]

(e) (i) Find the average speed, in metres per second, of the ball as it travels from John to Pierre. [1]

(ii) How much longer does it take for the ball to travel from John to Pierre than from Ahmed to John?
Give your answer in seconds. [2]

Question 5 O/N 10 P12 Q6

Factorise

(a) $4t^2 - 9$,

Answer (a) ....[1]

(b) $3x^2 + 5x - 2$.

Answer (b) ....[1]

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Question 6 O/N 10 P12 Q8

Make x the subject of the formula $y = 2x^2 + 3$.

Answer $x =$ ....[2]

Simple Algebraic Equations, Simultaneous Linear Equations, Quadratic Equations

Question 7 O/N 10 P11 Q18

Solve the simultaneous equations

$$x + 2y = 8,$$
$$y = \frac{1}{3}x + 9.$$

Answer $x =$ ....

$y =$ ....[3]