# Questions

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## Linear Equations

Q1) Solve the following linear equations.

a) $3x = 20 - x$

b) $t + 3 = 5 - t$

c) $3 + 5s = 2s + 13$

d) $5a - 4 = 3a + 6$

e) $3m + 8 = -2m$

f) $6y - 11 = 2y + 5$

g) $2b + 7 = 11 - 3b$

h) $5x - 7 = 3x$

i) $x = 3x - 2 + 7$

j) $4a = 3 - 2a - 23$

Q2) Solve the following linear equations by expanding the bracket.

a) $2(4t + 5) = 34$

b) $2(x + 3) - 5 = 9$

c) $3r - 7(1 + r) = 12$

d) $z(z + 2) = z^2 + 6$

e) $(x + 1)(x - 2) = (x + 3)^2$

f) $2(x + 3) = -2(x + 4)$

Q3) Solve the following linear equations by removing the fraction.

a) $\frac{x+1}{4} = 5$

b) $\frac{x}{2} + \frac{x}{4} = 1$

c) $\frac{a-1}{2} = \frac{a+1}{4}$

d) $\frac{x+1}{2} + \frac{x-1}{3} = 4$

e) $\frac{x+2}{2} + \frac{x-1}{5} = \frac{1}{20}$

f) $\frac{2}{x} + \frac{1}{3} = 5$

## Inequations

Q1) Solve the following linear inequations.

a) $3n > 9$

b) $t + 2 < -1$

c) $b - 3 \geq -2$

d) $7k > 3k - 16$

e) $6m - 7 \leq m$

f) $8 + 2x > 3(4 - x)$

g) $11 - 2(4 + 3x) < 39$

h) $19 + x > 15 + 3(x - 2)$

## Simultaneous Equations

Q1) Solve the following simultaneous equations

a) $3x - y = 1$
$x + y = 1$

b) $2x + y = 7$
$x + y = 4$

c) $5x - 2y = 13$
$3x + 2y = 3$

d) $2x - 2y = 9$
$4x - 2y = 16$

Q2) Solve the following simultaneous equations

a) $x + 3y = 10$
$2x + 5y = 18$

b) $2x + y = 10$
$-x + 2y = 9$

c) $5x - 4y = 24$
$2x = y + 9$

d) $-3x + 2y = 5$
$4x + 3y = -1$

Q3) Rearrange the following straight lines to the format $y = mx + c$ and sketch them on an x-y axis. Using your sketch estimate the solution to the simultaneous equations.

a) $4x + y = 9$
$2x - y = 3$

b) $2x + 3y = 8$
$2x + y = -4$

c) $x - 3y = 8$
$2x + y = -4$

d) $y - 4x = 8$
$y = 4x + 2$

Q4) Use simultaneous equations to solve the following.

a) David and Jenny are at a café with a group of friends. David buys 2 cups of coffee and 3 cups of tea at a cost of £9.75. Jenny buys 1 cup of coffee and 4 cups of tea at a cost of £7.75. Work out the cost of a cup of coffee and a cup of tea.

b) 9 pens and 5 pencils cost £3.20, and 7 pens and 8 pencils cost £2.90.
Find the unit price for each pen and pencil.

c) 2 tables and 3 chairs together cost £2,000 whereas 3 tables and 2 chairs together cost £2,500. Find the cost of a table and a chair.

## Rearranging Formulas

Q1) Change the subject of the formula to $t$.

a) $s = t + 4$

b) $s = t - 2$

c) $s = 3 - t$

d) $a = 5t$

e) $a = \frac{t}{5}$

f) $s = \frac{3t}{5}$

Q2) Change the subject of the formula to $a$.

a) $3a - x = a + 2x$

b) $a + 2 = x(3 + a)$

c) $z = \frac{a-3}{5-a}$

d) $x(a - 1) = b(a + 2)$

e) $a - 5 = ax + b$

f) $3a - c = a + 6c$

Q3) Change the subject of the formula to $a$.

a) $r = t^2$

b) $r = \sqrt{t}$

c) $r = \frac{\sqrt{t}}{5}$

d) $3t^2 + r = s$

e) $\sqrt{t + 3} = s$

f) $\frac{1}{2}\sqrt{2t - 4} = s$