9 Solving equations

Question 1 Solve the following equations:

(a) $5m = m + 28$

(b) $17 - a = 43$

(c) $3x + 5 = x + 13$

(d) $y - 11 = 2y - 9$

(e) $7 - 3p = 14 - p$

(f) $15 - 4b = 2 - 5b$

Question 2 Solve the following equations:

(a) $7(y - 3) = 18$

(b) $5(3 - 2x) = -1$

(c) $4 - a = -5(a + 3)$

(d) $2(y + 3) + 3(y + 4) = 15$

(e) $7(2m - 5) = 3(3m + 4)$

(f) $5(3r + 2) - 2(r - 7) = 5r$

Question 3 Solve the following equations:

(a) $\dfrac{2a + 9}{3} = 5$

(b) $\dfrac{5x - 1}{7} = -1$

(c) $\dfrac{m}{3} + m = 6$

(d) $\dfrac{3r}{4} - 5 = 2r$

(e) $x + \dfrac{1}{2} = \dfrac{4}{5}x$

(f) $\dfrac{34 - 2y}{5} = 3y$

Question 4 Solve the following equations:

(a) $\dfrac{21}{2x} = 3$

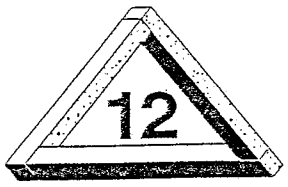
(b) $\dfrac{1}{p + 3} = 4$

(c) $\dfrac{7}{3 - 4m} = -2$

(d) $\dfrac{x}{2} + \dfrac{x}{3} = 3$

(e) $\dfrac{q}{5} - \dfrac{q}{6} = 1$

(f) $\dfrac{5n}{7} - \dfrac{2n}{3} = \dfrac{3}{4}$



Solving problems with equations

By first setting up an equation, solve each of the following problems:

1 The sum of three consecutive integers is 471. Find the middle one.

2 In a class of 36 students there are 12 more girls than boys. How many girls are there?

3 A triangle has a perimeter of 47 cm. If one side is 9 cm longer than the second side, and the third side is 4 cm shorter than the second side, find the length of the second side.

4 The length of a rectangle is 5 more than twice the width. Find its dimensions if the perimeter is 64 cm.

5 In a yacht race the second leg is twice as long as the first, while the third leg is 10 km longer than the second.

Find the length of the second leg if the race is run over a distance of 15 km.

9 Equations – Answers

1 (a) $m = 7$ (b) $a = -26$ (c) $x = 4$
(d) $y = -2$ (e) $p = -3\frac{1}{2}$ (f) $b = -13$

2 (a) $y = 5\frac{4}{7}$ (b) $x = 1\frac{3}{5}$ (c) $a = -4\frac{3}{4}$
(d) $y = -\frac{3}{5}$ (e) $m = 9\frac{2}{5}$ (f) $r = -3$

3 (a) $a = 3$ (b) $x = -1\frac{1}{5}$ (c) $m = 4\frac{1}{2}$
(d) $r = -4$ (e) $x = -2\frac{1}{2}$ (f) $y = 2$

4 (a) $x = 3\frac{1}{3}$ (b) $p = -2\frac{3}{4}$ (c) $m = 1\frac{5}{8}$
(d) $x = 3\frac{3}{5}$ (e) $q = 30$ (f) $n = 15\frac{3}{4}$

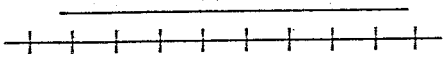
5 (a) $p = 32$ (b) $n = 3$ (c) $d = -5\frac{4}{5}$
(d) $q = 14\frac{1}{2}$ (e) $x = 11$ or $x = -1$
(f) $x = 22$

6 (a) $S = 90$ (b) $v = 15{\cdot}52$ (c) $V = 401{\cdot}92$
(d) $C = 35$ (e) $V = 2662{\cdot}95$ (f) $S = 1440$
(g) $x = -1$ or $-\frac{2}{3}$ (h) $R = 1{\cdot}5$

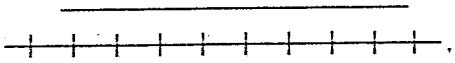
15 Inequations

Solve the following inequations and graph each solution on a number line:

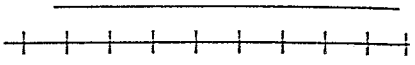
(a) $y-7 > -2$



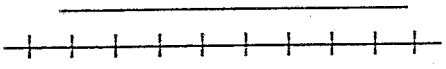
(b) $x+2 \leq 5$



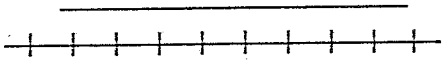
(c) $3m < 21$



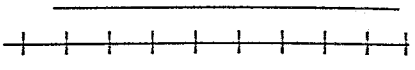
(d) $\frac{n}{5} \geq 2$



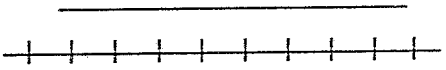
(e) $\frac{x}{2} < -3$



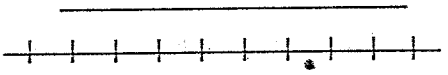
(f) $-5b < -20$



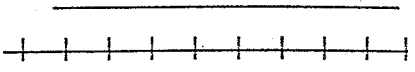
(g) $2p+1 \geq 7$



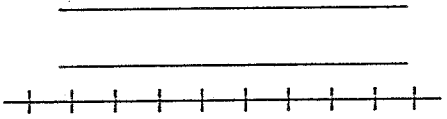
(h) $3m-2 \leq 13$



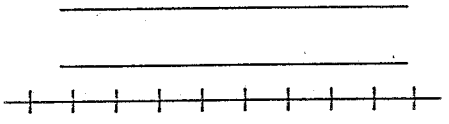
(i) $\frac{x}{2}+3 < 5$



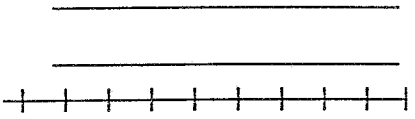
(j) $2(3y-2) \geq 14$



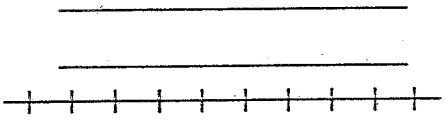
(k) $\frac{m-3}{4} < 2$



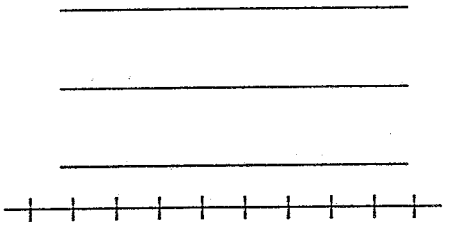
(l) $\frac{x}{2}+x \leq 3$



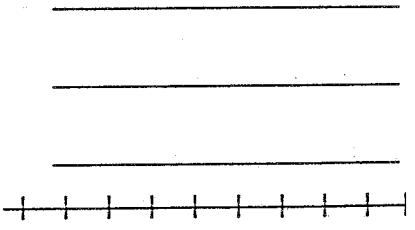
(m) $5x+3 \geq x+21$



(n) $\frac{1-3x}{2} > 11$



(o) $\frac{3-2x}{2} > \frac{1-3x}{5}$

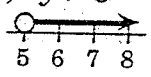


12 Solving problems with equations

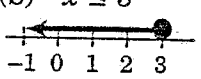
1 157
2 24 girls
3 14 cm
4 9 cm by 23 cm
5 2 km

15 Inequations — ANSWERS

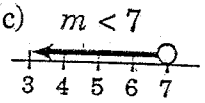
(a) $y > 5$



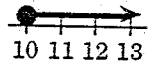
(b) $x \leq 3$



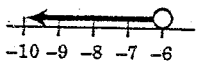
(c) $m < 7$



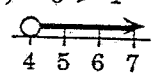
(d) $n \geq 10$



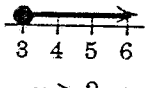
(e) $x < -6$



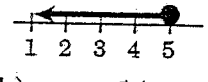
(f) $b > 4$



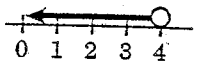
(g) $p \geq 3$



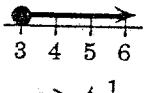
(h) $m \leq 5$



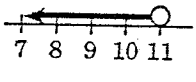
(i) $x < 4$



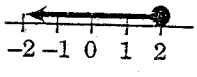
(j) $y \geq 3$



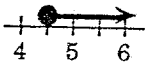
(k) $m < 11$



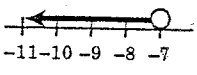
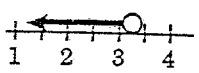
(l) $x \leq 2$



(m) $x \geq 4\frac{1}{2}$



(n) $x < -7$



(o) $x < 3\frac{1}{4}$