

## A Algebra: Solving linear Inequations

Skill 3.7

Solve these inequations and show the solution using a number line:

1  $x + 1 \leq -4$

2  $3x > 12$

3  $6x + 2 \geq 3x + 8$

4  $5 - 2x < 7$

5  $\frac{-5x + 1}{2} \geq -2$

6  $2(x - 3) < 4$

## B Algebra: Working with literal equations

Skill 3.8

1 Make  $a$  the subject:

(a)  $S = \frac{a}{2}(n + L)$     (b)  $W = 4ab^2$     (c)  $C = 7a^2b$     (d)  $A = \frac{1}{2}(a + b)h$

(e)  $P = \frac{\pi d}{a}$     (f)  $V^2 = 2ga$     (g)  $P = t(a + d)^2$     (h)  $Ws = 50ad$

(i)  $L = \frac{WH}{8a}$     (j)  $R = a + \frac{V^2}{b}$     (k)  $d = \frac{a + 2}{p}$     (l)  $S = \frac{u}{2}(a + L)$

2 The formula to find the volume of a cylinder with radius ( $r$  cm) and height ( $h$  cm) is given by:  $V = \pi r^2 h$ . Make  $r$  the subject and find the radius measure for these cylinders where:

(a)  $V = 20 \text{ cm}^3, h = 4 \text{ cm}$     (b)  $V = 320 \text{ cm}^3, h = 6.3 \text{ cm}$     (c)  $V = 15 \text{ cm}^3, h = 8 \text{ cm}$

(d)  $V = 180 \text{ cm}^3, h = 4 \text{ cm}$     (e)  $V = 32 \text{ cm}^3, h = 9 \text{ cm}$     (f)  $V = 260 \text{ cm}^3, h = 1.2 \text{ cm}$

## C Indices: Negative powers

Skill 4.6

1 Express with positive powers:

(a)  $2^{-4}a^4b^{-3}$     (b)  $3^2a^{-2}b$     (c)  $4^{-2}a^{-4}b^3$     (d)  $2^{-4}a^2b^{-3}$   
 (e)  $3^{-2}a^4b^{-3}$     (f)  $5^{-1}ab^{-4}$     (g)  $8^2x^{-2}y^3$     (h)  $7^{-2}xy^3$   
 (i)  $4^{-1}x^{-2}y^{-3}$     (j)  $6^{-2}b^{-3}$

2 Expand the brackets:

(a)  $(3a^{-2}b^3)^{-1}$     (b)  $(4a^{-4}b)^{-2}$     (c)  $(2^{-3}a^4b)^{-3}$     (d)  $(5^2a^{-3})^{-1}$   
 (e)  $\left(\frac{a^{-4}b^3}{2c^2}\right)^{-1}$     (f)  $\left(\frac{b^{-4}}{2^3c^8}\right)^{-2}$     (g)  $\left(\frac{4y^{-3}}{x^2}\right)^{-2}$     (h)  $\left(\frac{3^2a^{-2}}{b^3}\right)^{-3}$   
 (i)  $-(2a^4b^3)^{-2}$     (j)  $(5^2a^4b^2)^{-1}$

## D Cartesian plane: Sketching parabolas

Skill 5.9

Sketch these parabolas by finding the  $x$  and  $y$  intercepts as well as completing the square to find the turning point:

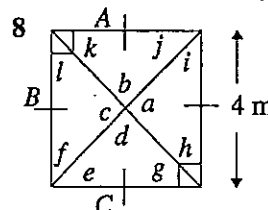
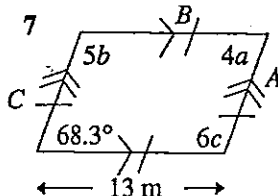
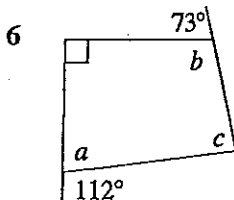
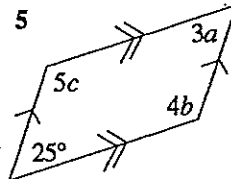
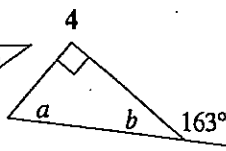
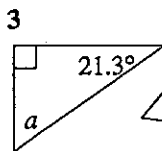
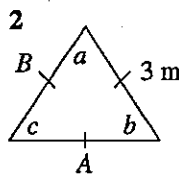
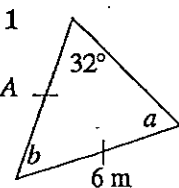
1  $y = x^2 - 2x - 3$

2  $y = x^2 - 2x - 15$

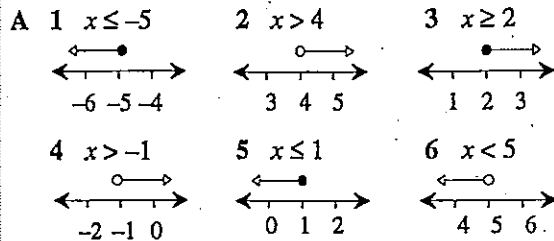
## E Geometry: Angles in triangles and quadrilaterals

Skill 6.2

Find the side lengths in the following:



## Worksheet 16



**B**

1 (a) $a = \frac{2s}{(l+l)}$	(b) $a = \frac{W}{4b^2}$
(c) $a = \sqrt{\frac{c}{7b}}$	(d) $a = \frac{2A}{h} - b$
(e) $a = \frac{\pi d}{P}$	(f) $a = \frac{V^2}{2g}$
(g) $a = \sqrt{\frac{P}{t}} - d$	(h) $a = \frac{Ws}{50d}$
(i) $a = \frac{WH}{8L}$	(j) $a = R - \frac{V^2}{B}$
(k) $a = dp - 2$	(l) $a = \frac{2s}{u} - L$

2  $r = \sqrt{\frac{V}{\pi h}}$

(a) 1.26	(b) 4.02	(c) 0.77
(d) 3.78	(e) 1.06	(f) 8.30

**C**

1 (a) $\frac{a^4}{16b^3}$	(b) $\frac{9b}{a^2}$	(c) $\frac{b^3}{16a^4}$
(d) $\frac{a^2}{16b^3}$	(e) $\frac{a^4}{9b^3}$	(f) $\frac{a}{5b^4}$
(g) $\frac{64y^3}{x^2}$	(h) $\frac{x}{49y^3}$	(i) $\frac{1}{4x^2y^3}$
(j) $\frac{1}{36b^3}$		

2

(a) $\frac{a^2}{3b^3}$	(b) $\frac{a^8}{16b^2}$	(c) $\frac{64}{a^{12}b^3}$
(d) $\frac{a^3}{25}$	(e) $\frac{2a^4c^2}{b^3}$	(f) $64b^8c^{16}$
(g) $\frac{x^4y^6}{16}$	(h) $\frac{a^6b^9}{729}$	(i) $-\frac{1}{4a^8b^6}$
(j) $\frac{1}{25a^4b^2}$		

**D** 1  $x$  int = 3, -1  
 $y$  int = -3  
 T.P. = (1, -4)

