

1. Solve:

(a)  $7w - 5 = 9$

(c)  $5(x - 3) = 3(x + 1) - 9$

(b)  $3a - 1 = a + 5$

(d)  $\frac{m}{2} + 3 = 17$

2. Solve the following equations.

(a)  $\frac{4x}{5} - \frac{2x}{3} = 7,$

(c)  $8(2u + 3) - 4(3u - 2) = 20$

(b)  $\frac{2(x - 3)}{3} - \frac{5x}{6} = 9,$

(d)  $\frac{8u - 20}{6} = \frac{4u + 2}{5}$

3. Let  $s = ut + \frac{1}{2}at^2$ .

(a) Find  $s$  if  $u = 3$ ,  $t = 4$  and  $a = 2$ ,

(b) Find  $a$  if  $s = 120$ ,  $u = 4$  and  $t = 5$ .

4. Solve the following inequations, graphing each solution on a number line.

(a)  $2x + 3 > 15$

(b)  $3 - 2x \leq 13$

5. Rearrange the following formulae:

(a)  $2x + y = 7$  to make  $y$  the subject

(b)  $\frac{a}{b}p + c = d$  to make  $p$  the subject

(c)  $a(x + b) = c(x + d)$  to make  $x$  the subject.

6. Construct formulae for:

(a) the total cost  $C$  of  $n$  pencils at 40 cents each;

(b) the perimeter of a semicircle of radius  $r$  centimetre (give your answer in terms of  $\pi$ ).

7. Solve the following questions by first constructing an equation. (There are no marks for a solution if no equation is given.) Be careful to define any pronumerals that you introduce.

(a) I think of a number, add 6, double the result and end up with 14. What was the original number?

(b) Two men have \$672 between them. If the first man has five times as much as the second, how much does each have?

(c) Ann is twice as old as Bill and 9 years ago the sum of their ages was 33. Find their present ages.

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1)  $7w - 5 = 9$   
 $7w = 14$   
 $w = 2$

2)  $3a - 1 = a + 5$   
 $3a = a + 6$   
 $2a = 6$   
 $a = 3$

3)  $5(x-3) = 3(x+1) - 9$   
 $5x - 15 = 3x + 3 - 9$   
 $5x - 15 = 3x - 6$   
 $2x = 9$   
 $x = 4\frac{1}{2}$

4)  $\frac{m}{2} + 3 = 17$  OR  $m + 6 = 34$   
 $\frac{m}{2} = 14$   $m = 28$   
 $m = 28$

5)  $\frac{4x}{8} - \frac{2x}{3} = 7$   
 $12x - 10x = 105$   
 $2x = 105$   
 $x = 52.5$

6)  $\frac{2(x-3) - 5x}{3} - \frac{5x}{6} = 9$   
 $\frac{2x - 6 - 5x}{3} - \frac{5x}{6} = 9$   
 $\frac{-3x - 6}{3} - \frac{5x}{6} = 9$   
 $-x - 2 - \frac{5x}{6} = 9$   
 $-\frac{11x}{6} - 2 = 9$   
 $-\frac{11x}{6} = 11$   
 $x = -6$

1)  $12x - 36 - 15x = 162$   
 $-3x = 198$   
 $x = -66$

2)  $8(2u+3) - 4(3u-2) = 20$   
 $16u + 24 - 12u + 8 = 20$   
 $4u + 32 = 20$   
 $4u = -12$   
 $u = -3$

3)  $\frac{8u-20}{6} = \frac{4u+2}{8}$   
 $5(8u-20) = 6(4u+2)$   
 $40u - 100 = 24u + 12$   
 $16u = 112$   
 $u = 7$

4)  $S = ut + \frac{1}{2}at^2$   
 $= 3 \times 4 + \frac{1}{2} \times 2 \times 4^2$   
 $= 12 + 16$   
 $= 28$

5)  $S = ut + \frac{1}{2}at^2$   
 $100 = 20 + \frac{1}{2} \times a \times 25$   
 $100 = \frac{1}{2} a \times 25$   
 $200 = 25a$   
 $8 = a$

1)  $2x+3 > 15$   
 $2x > 12$   
 $x > 6$

2)  $3-2x \leq 13$   
 $-2x \leq 10$   
 $x \geq -5$

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

4)  $\frac{a}{b}p + c = d$   
 $\frac{a}{b}p = d - c$   
 $p = \frac{b}{a}(d-c)$

5)  $a(x+b) = c(x+d)$   
 $ax + ab = cx + cd$   
 $ax - cx = cd - ab$   
 $x(a-c) = cd - ab$   
 $x = \frac{cd - ab}{a-c}$

6)  $C = 40\pi r$

7)  $P = 2r + \pi r$

Q7. a) let n be the number.  
 $2(n+6) = 14$   
 $2n + 12 = 14$   
 $2n = 2$   
 $n = 1$   
 The 2nd man has \$x  
 The first man has \$5x  
 $x + 5x = 672$   
 $6x = 672$   
 $x = 112$   
 The first has \$560  
 The second has \$112

b) let Bell be x years old now  
 Ann is  $2x$   
 Nine years ago, their ages were  $x-9, 2x-9$   
 $(x-9) + (2x-9) = 33$   
 $3x - 18 = 33$   
 $3x = 51$   
 $x = 17$   
 Their current ages are 17, 34