Simultaneous Equations

1. Solve the following pairs of equations

   (a) $5a + 2b = 16$
         $2a + 2b = 10$

   (b) $3c - 4d = 14$
         $c + 4d = 10$

   (c) $5g + 3h = 14$
         $5g + h = 8$

   (d) $2m + n = 22$
         $6m - n = 58$

   (e) $3p + 2q = 7$
         $3p + 8q = 1$

   (f) $6x - 3y = 12$
         $5x + 3y = -1$

   (g) $4u - 6w = -10$
         $2u - 6w = -14$

   (h) $5w - 2z = 15$
         $5w + z = 0$

   (i) $3a - 7c = 5$
         $2a - 7c = 1$

   (j) $5g + 6h = 1$
         $5g - 2h = -7$

   (k) $3m - 2n = 16$
         $5m + 2n = 80$

   (l) $4x + 3y = 170$
         $4x + y = 110$

   (m) $2u + 3w = 18$
         $4u - 3w = -54$

   (n) $3p + 7q = 19$
         $5p + 7q = 20$

   (o) $5h + 4k = 20$
         $5h + 8k = 34$

   (p) $10a + 4b = 24$
         $5a + 4b = 13$

   (q) $4m - 8n = -1$
         $8m - 8n = 12$

   (r) $10u - 2w = 8$
         $10u + 6w = 20$

2. Solve the following pairs of equations

   (a) $2a + 3b = 19$
         $3a - b = 1$

   (b) $5c + 2d = 26$
         $c + d = 7$

   (c) $5g - 3h = 16$
         $3g + h = 4$

   (d) $4x + 9y = 56$
         $2x + 4y = 26$

   (e) $3m + 2n = 17$
         $2m - 6n = -40$

   (f) $5p - 2q = 23$
         $2p + 8q = -26$

   (g) $2u + 3v = 23$
         $7u + v = -5$

   (h) $8g - 4h = 20$
         $2g + 3h = -7$

   (i) $5a + 2b = 23$
         $2a + 3b = 18$

   (j) $5e - 3g = -8$
         $4e + 5g = 38$

   (k) $4m - 2n = 16$
         $3m - 5n = 19$

   (l) $7u - 3v = -16$
         $5u + 4v = 7$

(m) $3x - 5y = 15$
$2x - 2y = 10$

(n) $3a + 7c = 97$
$4a + 3c = 47$

(o) $2p + 2q = 110$
$7p - 3q = 35$

(p) $4a - 6q = 2.3$
$3a + 4q = 10.65$

(q) $5m - 2n = -17$
$2m + 7n = -2.9$

(r) $4x + 4y = -20$
$5x - 3y = -1$

3. Find the coordinates of the point of intersection of each of the following pairs of lines.

(a)

$4x - y = 1$

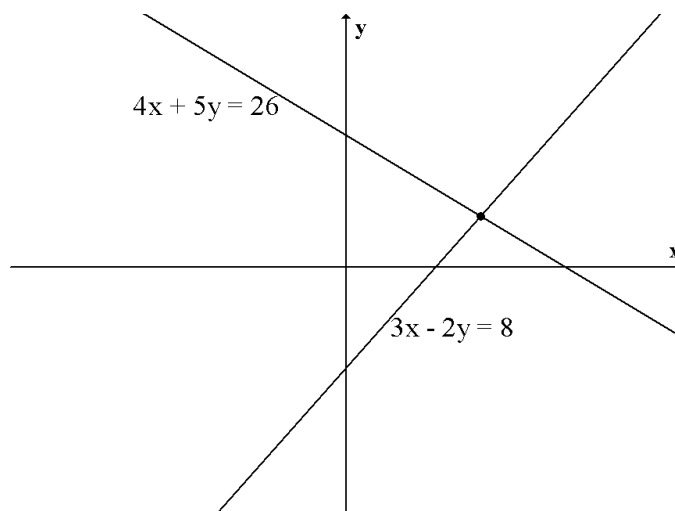$2x + y = 5$

(b)

$3x + 4y = 2$

$5x - 2y = 12$

(c)

$4x + 5y = 26$

$3x - 2y = 8$

(d)

$4x - 3y = -10$

$3x + 2y = -16$

(e)

$5x + y = 22$

$2x - 3y = 19$
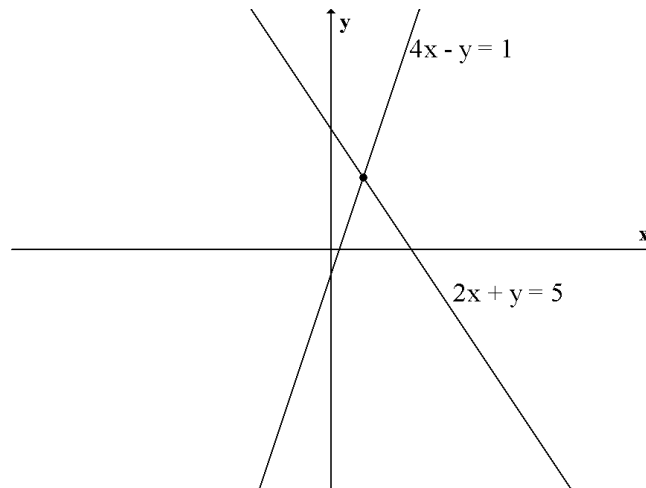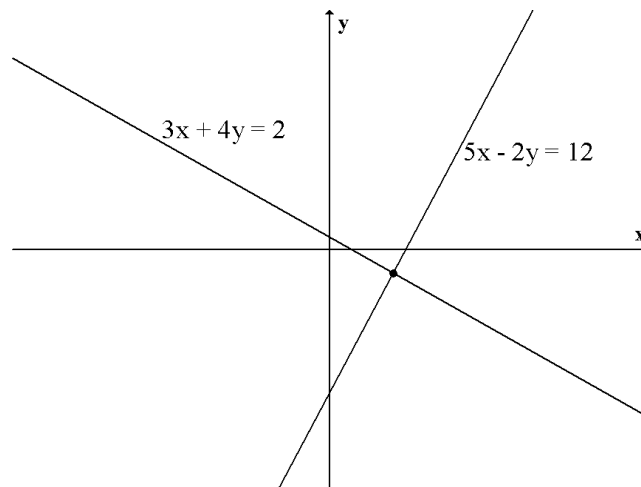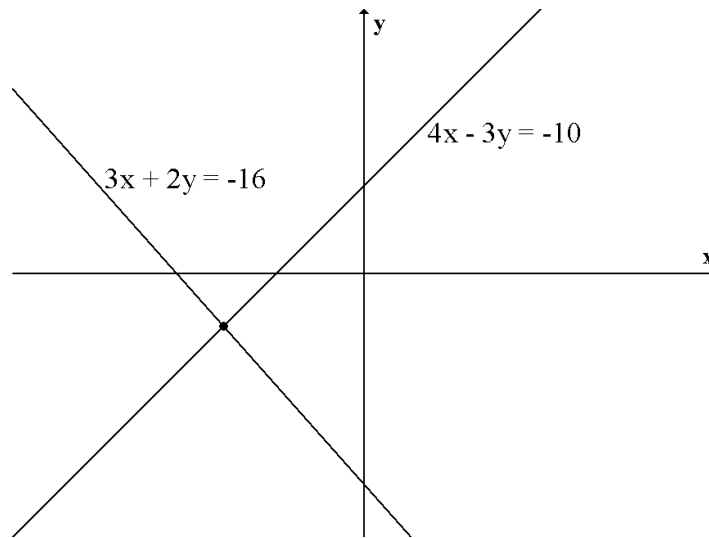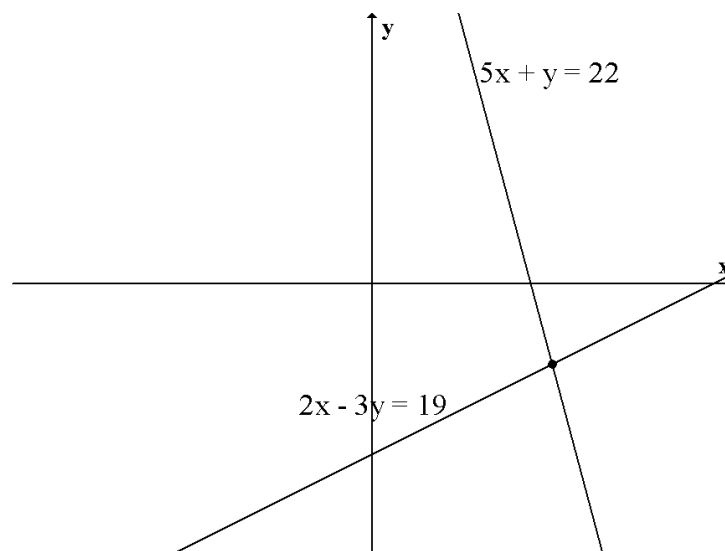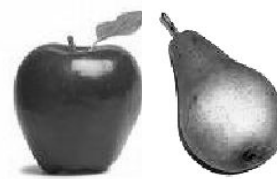
4. 2 apples and 3 pears cost 76 pence.
    3 apples and a pear cost 58 pence.

    Find the cost of an apple and of a pear.

5. 3 pens and 2 pencils cost 78 pence.
    5 pens and 3 pencils cost £1.27.

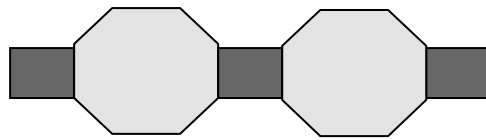   Find the cost of one pencil.

6. 4 knives and 5 forks cost £1.95.
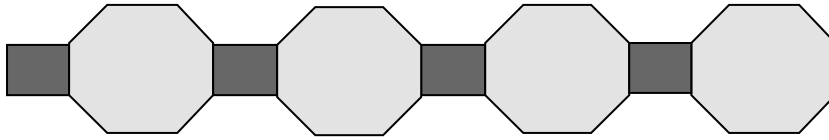   3 knives and 3 forks cost £1.32.

    Find the cost of 5 knives.

7. The diagram below shows patterns made with squares and octagons.
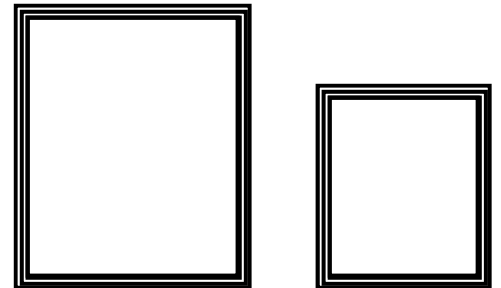   The total area of each pattern is given.

Area = 32 cm^2

Area = 56 cm^2

Calculate the area of one octagon.

8. The diagram opposite shows the same make of picture frame in two different sizes.

   2 large frames and 5 small frames cost £34.
   3 large frames and 4 small frames cost £37.

   Find the cost of a large frame and of a small frame.

9. 3 soup bowls and 2 dinner plates cost £25.
   2 soup bowls and 4 dinner plates cost £34.

   Find the cost of a dinner plate and of a soup bowl.

10. 5 two pound coins and 3 fifty pence coins weigh
    a total of 84 grams.
    2 two pound coins and 7 fifty pence coins weigh
    a total of 80 grams.

    Find the weight of a £2 coin.