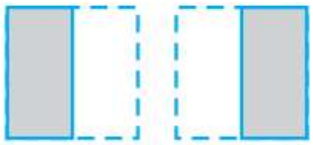
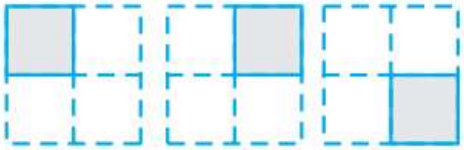
Fractions and Decimals: Exercise 2.2

Q.1 Which of the drawings (a) to (d) show:

(i) $2 \times \frac{1}{5}$ (ii) $2 \times \frac{1}{2}$ (iii) $3 \times \frac{2}{3}$ (iv) $3 \times \frac{1}{4}$

(a) 

(b) 

(c) 

(d) 

Sol:

(i) Given: $2 \times (1/5)$

This fraction shows the addition of 2 figures, each figure represents 1 shaded region out of 5 equal region.
Thus, fig (d) is correct answer.

(ii) Given: $2 \times (1/2)$

This fraction shows the addition of 2 figures, each figure represents 1 shaded region out of 2 equal regions.
Thus, fig (b) is correct answer.

(iii) Given: $3 \times (2/3)$

This fraction shows the addition of 3 figures, each figure represents 2 shaded region out of 3 equal regions.
Thus, fig (a) is correct answer.

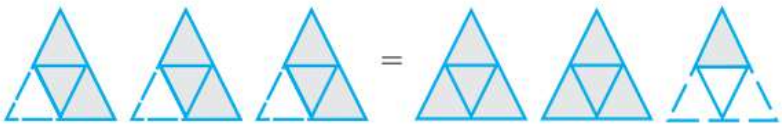
(iv) Given: $3 \times (1/4)$

This fraction shows the addition of 3 figures, each figure represents 1 shaded region out of 4 equal region.
Thus, fig (c) is correct answer.

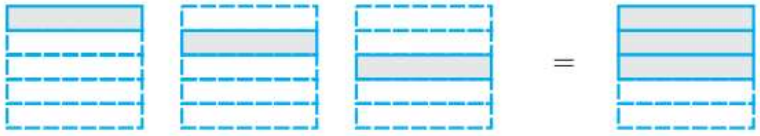
Q.2 Some pictures (a) to (c) are given below. Tell which of them show:

(i) $3 \times \frac{1}{5} = \frac{3}{5}$ (ii) $2 \times \frac{1}{3} = \frac{2}{3}$ (iii) $3 \times \frac{3}{4} = 2\frac{1}{4}$

(a)



(b)



(c)

Sol:
(i) Given: 3 × (1/5) = (3/5)
Fraction [3 × (1/5)] shows the addition of 3 figures, each figure represents 1 shaded region out of 5 equal regions and fraction (3/5)) represents 3 shaded regions out of 5 equal regions.
Thus, fig (c) is correct answer.

(ii) Given: 2 × (1/3) = (2/3)
Fraction [2 × (1/3)] shows the addition of 2 figures, each figure represents 1 shaded region out of 3 equal regions and (2/3) represents 2 shaded regions out of 3 equal regions.
Thus, fig (a) is the correct answer.

(iii) Given: 3 × (3/4) = $2\frac{1}{4}$

Fraction [3 × (3/4)] shows the addition of 3 figures, each figure represents 3 shaded region out of 4 equal regions and $2\frac{1}{4}$ represents 2 fully and 1 figure having 1 region as shaded out of 4 equal regions.

Thus, fig (b) is the correct answer.

Q.3 Multiply and reduce to lowest form and convert into a mixed fraction:
(i) 7x (3/5) **(ii) 4 x (1/3)** **(iii) 2 x (6/7)** **(iv) 5 x (2/9)**
(v) (2/3) x 4 **(vi) (5/2) x 6** **(vii) 11 x (4/7)** **(viii) 20 x (4/5)**
(ix) 13 x (1/3) **(x) 15 x (3/5)**
Sol: **(i) Given:** 7 x (3/5)
(7 x 3)/5 = 21/5 or 4(1/5)

(ii) Given: 4 x (1/3)
(4x1)/3 = 4/3 or 1(1/3)
(iii) Given: 2 x (6/7)
(2 x 6)/7 = (12/7)

(iv) Given: 5 x (2/9)
(5x2)/9 = 10/9 or 1(1/9)

(v) Given: (2/3) x 4
(2x4)/3 = 8/3 or 2(2/3)

(vi) Given: (5/2) x 6
(5x6)/2 = 30/2 = 15

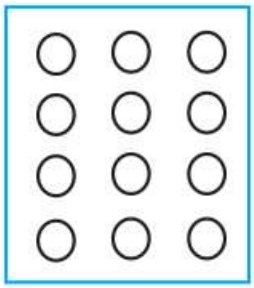
(vii) Given: 11 x (4/7)
(11x4)/7 = 44/7 = 6(2/7)

(viii) Given: 20 x (4/5)
(20 x 4) /5 = 80/5 or 16

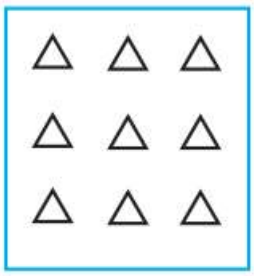
(ix) Given: 13 x (1/3)
(13 x 1) /3 = 13/3 or 4(1/3)

(x) Given: 15 x (3/5)
(15x3)/5 = 45/5 or 9

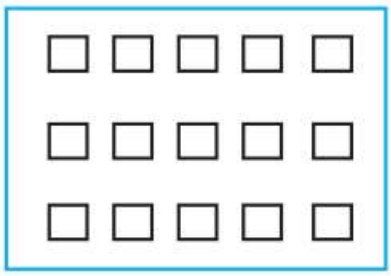
Q.4 Shade:
(i) 1/2 of the circles in box (a)
(ii) 2/3 of the triangles in box (b)
(iii) 3/5 of the squares in box (c).



(a)

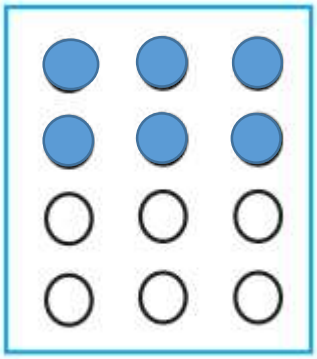


(b)



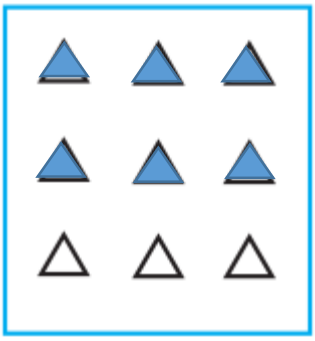
(c)

Sol:
(i) Given: (1/2) of the circles in box (a)
Since, there are 12 circles in the given box. So, we need to shade (1/2) of the circles in the figure.
By simplify, 12 x (1/2) = 6



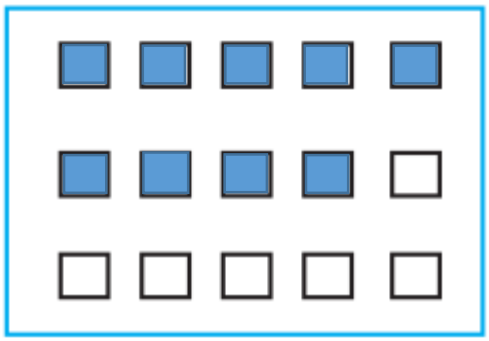
(a)

(ii) Given: 2/3 of the triangles in box (b)
Since, there are 9 triangles in the given box. So, we need to shade 2/3 of the triangles in the box.
By simplify, 9 × (2/3) = 18/3
= 6



(b)

(iii) Given: 3/5 of the squares in box (c).
Since, there are 15 squares in the given box. So, we need to shade 3/5 of the squares in the box.
By simplify, 15 × (3/5) = 45/5
= 9



(c)

Q.5 Find:
(a) (1/2) of (i) 24 (ii) 46 **(b) (2/3) of (i) 18 (ii) 27**
(c) (3/4) of (i) 16 (ii) 36 **(d) (4/5) of (i) 20 (ii) 35**
Sol:
(a) Given: (1/2) of (i) 24 (ii) 46
(i) (1/2) of 24: (1/2) x 24 = 24/2
= 12

(ii) (1/2) of 46: (1/2) x 46 = 46/2
= 23

(b) Given: (2/3) of (i) 18 (ii) 27
(i) 2/3 of 18: (2/3) x 18 = 36/3
= 12
(ii) 2/3 of 27: (2/3) x 27 = 54/3
= 18

(c) Given: (3/4) of (i) 16 (ii) 36
(i) (3/4) of 16 = (3/4) x 16 = 48/4
= 12
(ii) (3/4) of 36 = (3/4) x 36 = 108/4
= 27
(d) Given: (4/5) of (i) 20 (ii) 35
(i) (4/5) of 20 = (4/5) x 20 = 80/5
= 16
(ii) (4/5) of 35 = (4/5) x 35 = 140/5
= 28

Q.6 Multiply and express as a mixed fraction:

(a) $3 \times 5\frac{1}{5}$ **(b)** $5 \times 6\frac{3}{4}$ **(c)** $7 \times 2\frac{1}{4}$

(d) $4 \times 6\frac{1}{3}$ **(e)** $3\frac{1}{4} \times 6$ **(f)** $3\frac{2}{5} \times 8$

Sol: **(a) Given:** $3 \times 5\frac{1}{5}$

Firstly we convert the mixed fraction onto improper fraction.

$3 \text{ x } 5\frac{1}{5} = 3 \text{ x } (26/5)$

$= 78/5 \text{ or } 15\frac{3}{5}$

(b) Given: $5 \text{ x } 6\frac{3}{4}$

Firstly we convert the mixed fraction onto improper fraction.

$5 \text{ x } 6\frac{3}{4} = 5 \text{ x } (27/4)$

$= 135/4 \text{ or } 33\frac{3}{4}$

(c) Given: 7 x $2\frac{1}{4}$

Firstly we convert the mixed fraction onto improper fraction.

7 x $2\frac{1}{4} = 7 \text{ x } (9/4)$

$= 63/4 \text{ or } 15\frac{3}{4}$

(d) Given: $4 \text{ x } 6\frac{1}{3}$

Firstly we convert the mixed fraction onto improper fraction.

$4 \text{ x } 6\frac{1}{3} = 4 \text{ x } 19/3$

$= 76/3 \text{ or } 25\frac{1}{3}$

(e) Given: $3\frac{1}{4} \text{ x } 6$

Firstly we convert the mixed fraction onto improper fraction.

$3\frac{1}{4} \text{ x } 6 = (13/4) \text{ x } 6$

$= 39/6 \text{ or } 19\frac{1}{2}$

(f) Given: $3\frac{2}{5} \text{ x } 8$

Firstly we convert the mixed fraction onto improper fraction.

$3\frac{2}{5} \text{ x } 8 = (17/5) \text{ x } 8$

$= 136/5 \text{ or } 27\frac{1}{5}$

Q.7 Find: (a) (1/2) of (i) $2\frac{3}{4}$ (ii) $4\frac{2}{9}$ (b) (5/8) of (i) $3\frac{5}{6}$ (ii) $9\frac{2}{3}$

Sol:

(a) Given: (1/2) of (i) $2\frac{3}{4}$ (ii) $4\frac{2}{9}$

(i) (1/2) of $2\frac{3}{4}$ = (1/2) x $2\frac{3}{4}$

Firstly we convert the mixed fraction onto improper fraction.

(1/2) x $2\frac{3}{4}$ = (1/2) x (11/4)

= 11/8 or $1\frac{3}{8}$

(ii) (1/2) of $4\frac{2}{9}$ = (1/2) x $4\frac{2}{9}$

Firstly we convert the mixed fraction onto improper fraction.

(1/2) x $4\frac{2}{9}$ = (1/2) x (38/9)

= 38/18

= 19/9 or $2\frac{1}{9}$

(b) Given: (5/8) of (i) $3\frac{5}{6}$ (ii) $9\frac{2}{3}$

(i) (5/8) of $3\frac{5}{6}$ = (5/8) x $3\frac{5}{6}$

Firstly we convert the mixed fraction onto improper fraction.

(5/8) x $3\frac{5}{6}$ = (5/8) x (23/6)

= 115/48 or $2\frac{19}{48}$

(ii) (5/8) of $9\frac{2}{3}$ = (5/8) x $9\frac{2}{3}$

Firstly we convert the mixed fraction onto improper fraction.

(5/8) x $9\frac{2}{3}$ = (5/8) x (29/3)

= 145/24 or $6\frac{1}{24}$

Q.8 Vidya and Pratap went for a picnic. Their mother gave them a water bottle that contained 5 liters water. Vidya consumed 2/5 of the water. Pratap consumed the remaining water.
(i) How much water did Vidya drink?
(ii) What fraction of the total quantity of water did Pratap drink?

Sol: **Given:** quantity of water in the water bottle = 5 liters

And quantity of water consumed by Vidya = 2/5 of 5 liters

$= (2/5) \times 5$

$=10/5 = 2$ liters

Thus, the total water consumed by Vidya = 2 liters

(ii) Now, quantity of water consumed by Pratap will be = (1 – water consumed by Vidya)

$= (1 – (2/5))$

$= [(1 \times 5) - (2 \times 1)] / 5$

$= (5-2)/5$

$= 3/5$

So, quantity of water consumed by Pratap = 3/5 of 5 liters

$= (3/5) \times 5$

$= 15/5 = 3$ liters

Thus, quantity of water drank by Pratap = 3 liters