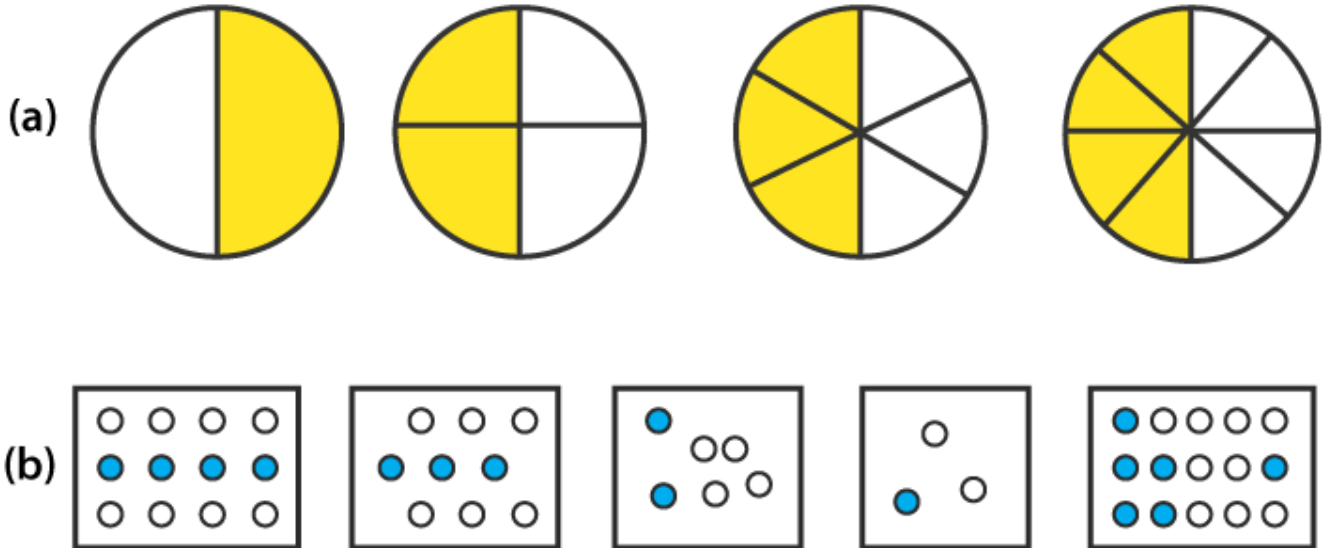


EXERCISE 7.3

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1. Write the fractions. Are all these fractions equivalent?



Solutions:

(a)

(i) The shaded portion is $1/2$

(ii) The shaded portion is $2/4 = (2/2) / (4/2) = 1/2$

(iii) The shaded portion is $3/6 = (3/3) / (6/3) = 1/2$

(iv) The shaded portion is $4/8 = (4/4) / (8/4) = 1/2$

Hence, all fractions are equivalent.

(b)

(i) The shaded portion is $4/12 = (4/4) / (12/4) = 1/3$

(ii) The shaded portion is $3/9 = (3/3) / (9/3) = 1/3$

(iii) The shaded portion is $2/6 = (2/2) / (6/2) = 1/3$

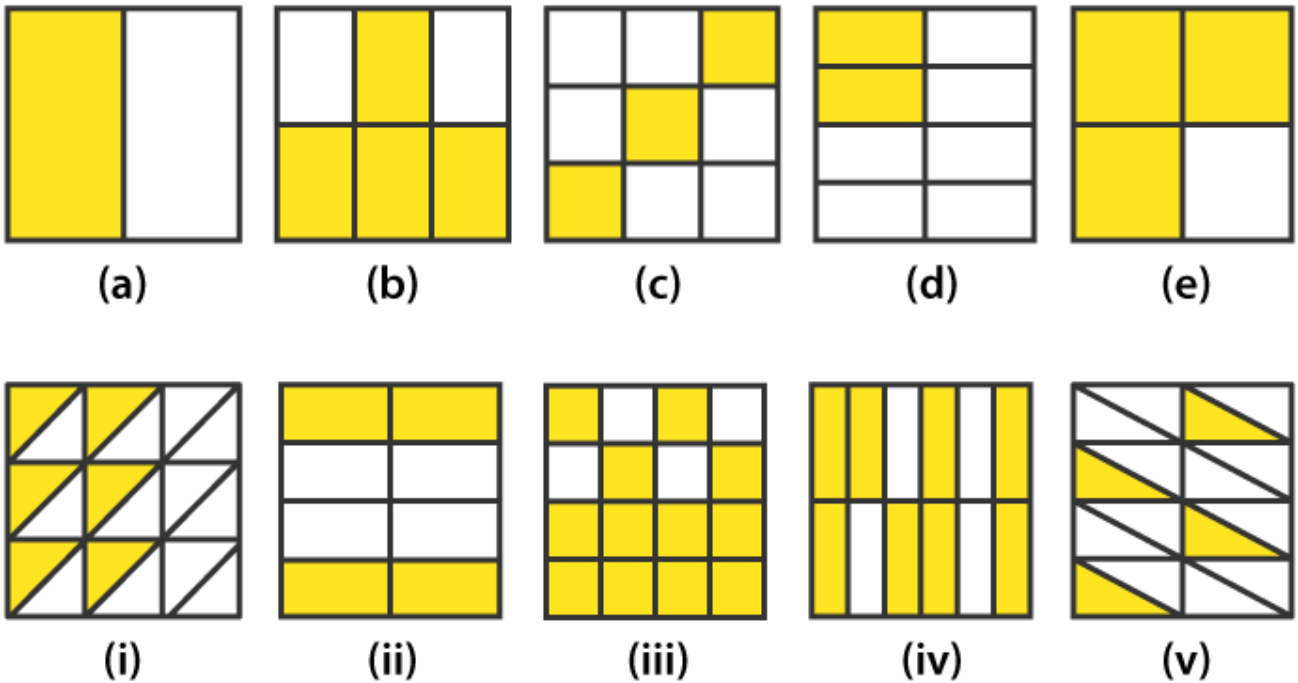
(iv) The shaded portion is $1/3$

(v) The shaded portion is $6/15 = (6/3) / (15/3) = 2/5$

All the fractions in their simplest form are not equal

Hence, they are not equivalent fractions.

2. Write the fractions and pair up the equivalent fractions from each row.



Solutions:

(a) $1/2$

(b) $4/6 = (4/2)/(6/2)$

$= 2/3$

(c) $3/9 = (3/3)/(9/3)$

$= 1/3$

(d) $2/8 = (2/2)/(8/2)$

$= 1/4$

(e) $3/4$

(i) $6/18 = (6/6)/(18/6)$

$= 1/3$

(ii) $4/8 = (4/4)/(8/4)$

$= 1/2$

$$(iii) 12 / 16 = (12 / 4) / (16 / 4)$$

$$= 3 / 4$$

$$(iv) 8 / 12 = (8 / 4) / (12 / 4)$$

$$= 2 / 3$$

$$(v) 4 / 16 = (4 / 4) / (16 / 4)$$

$$= 1 / 4$$

The following are the equivalent fractions

$$(a) \text{ and (ii)} = 1 / 2$$

$$(b) \text{ and (iv)} = 2 / 3$$

$$(c) \text{ and (i)} = 1 / 3$$

$$(d) \text{ and (v)} = 1 / 4$$

$$(e) \text{ and (iii)} = 3 / 4$$

3. Replace \square in each of the following by the correct number:

$$(a) 2 / 7 = 8 / \square$$

$$(b) 5 / 8 = 10 / \square$$

$$(c) 3 / 5 = \square / 20$$

$$(d) 45 / 60 = 15 / \square$$

$$(e) 18 / 24 = \square / 4$$

Solutions:

(a) Given

$$2 / 7 = 8 / \square$$

$$2 \times \square = 7 \times 8$$

$$\square = (7 \times 8) / 2$$

$$= 28$$

(b) Given

$$5 / 8 = 10 / \square$$

$$\square = (8 \times 10) / 5$$

$$= 16$$

(c) Given

$$3 / 5 = \square / 20$$

$$\square = (3 \times 20) / 5$$

$$= 12$$

(d) Given

$$45 / 60 = 15 / \square$$

$$\square = (15 \times 60) / 45$$

$$= 20$$

(e) Given

$$18 / 24 = \square / 4$$

$$\square = (18 \times 4) / 24$$

$$= 3$$

4. Find the equivalent fraction of $3 / 5$ having

(a) denominator 20

(b) numerator 9

(c) denominator 30

(d) numerator 27

Solutions:

(a) We require denominator 20

Let M be the numerator of the fractions

$$\therefore M / 20 = 3 / 5$$

$$5 \times M = 20 \times 3$$

$$M = (20 \times 3) / 5$$

$$= 12$$

Therefore, the required fraction is $12 / 20$

(b) We require numerator 9

Let N be the denominator of the fractions

$$\therefore 9 / N = 3 / 5$$

$$3 \times N = 9 \times 5$$

$$N = (9 \times 5) / 3$$

$$= 15$$

Therefore, the required fraction is $9 / 15$

(c) We require denominator 30

Let D be the numerator of the fraction

$$\therefore D / 30 = 3 / 5$$

$$5 \times D = 3 \times 30$$

$$D = (3 \times 30) / 5$$

$$= 18$$

Therefore, the required fraction is $18 / 30$

(d) We require numerator 27

Let N be the denominator of the fraction

$$\therefore 27 / N = 3 / 5$$

$$3 \times N = 5 \times 27$$

$$N = (5 \times 27) / 3$$

$$= 45$$

Therefore, the required fraction is $27 / 45$

5. Find the equivalent fraction of $36 / 48$ with

(a) numerator 9

(b) denominator 4

Solutions:

(a) Given numerator = 9

$$\therefore 9 / D = 36 / 48$$

$$D \times 36 = 9 \times 48$$

$$D = (9 \times 48) / 36$$

$$D = 12$$

Hence, the equivalent fraction is $9 / 12$

(b) Given, denominator = 4

$$\therefore N / 4 = 36 / 48$$

$$N \times 48 = 4 \times 36$$

$$N = (4 \times 36) / 48$$

$$= 3$$

Hence, the equivalent fraction is $3 / 4$

6. Check whether the given fractions are equivalent:

(a) $5 / 9, 30 / 54$

(b) $3 / 10, 12 / 50$

(c) $7 / 13, 5 / 11$

Solutions:

(a) Given $5 / 9$ and $30 / 54$

$$\text{We have } 5 \times 54 = 270$$

$$9 \times 30 = 270$$

$$5 \times 54 = 9 \times 30$$

Hence, $5 / 9$ and $30 / 54$ are equivalent fractions

(b) Given $3 / 10$ and $12 / 50$

$$\text{We have } 3 \times 50 = 150$$

$$10 \times 12 = 120$$

$$3 \times 50 \neq 10 \times 12$$

Hence, $3 / 10$ and $12 / 50$ are not equivalent fractions

(c) Given $7 / 13$ and $5 / 11$

We have $7 \times 11 = 77$

$$5 \times 13 = 65$$

$$7 \times 11 \neq 5 \times 13$$

Hence, $7/13$ and $5/11$ are not equivalent fractions

7. Reduce the following fractions to simplest form:

(a) $48/60$

(b) $150/60$

(c) $84/98$

(d) $12/52$

(e) $7/28$

Solutions:

(a) $48/60 = (12 \times 4)/(12 \times 5)$

$$= 4/5$$

(b) $150/60 = (30 \times 5)/(30 \times 2)$

$$= 5/2$$

(c) $84/98 = (14 \times 6)/(14 \times 7)$

$$= 6/7$$

(d) $12/52 = (3 \times 4)/(13 \times 4)$

$$= 3/13$$

(e) $7/28 = 7/(7 \times 4)$

$$= 1/4$$

8. Ramesh had 20 pencils, Sheelu had 50 pencils and Jamaal had 80 pencils. After 4 months, Ramesh used up 10 pencils, Sheelu used up 25 pencils and Jamaal used up 40 pencils. What fraction did each use up? Check if each has used up an equal fraction of her/his pencils.

Solutions:

Total number of pencils Ramesh had = 20

Number of pencils used by Ramesh = 10

$$\therefore \text{Fraction} = 10/20 = 1/2$$

Total number of pencils Sheelu had = 50

Number of pencils used by Sheelu = 25

$$\therefore \text{Fraction} = 25 / 50 = 1 / 2$$

Total number of pencils Jamaal had = 80

Number of pencils used by Jamaal = 40

$$\therefore \text{Fraction} = 40 / 80 = 1 / 2$$

Yes, each has used up an equal fraction of pencils i.e $1 / 2$

9. Match the equivalent fractions and write two more for each.

(i) $250 / 400$ (a) $2 / 3$

(ii) $180 / 200$ (b) $2 / 5$

(iii) $660 / 990$ (c) $1 / 2$

(iv) $180 / 360$ (d) $5 / 8$

(v) $220 / 550$ (e) $9 / 10$

Solutions:

(i) $250 / 400$

$$= (5 \times 50) / (8 \times 50)$$

$$= 5 / 8$$

$25 / 40$ and $30 / 48$ are two more fractions

(ii) $180 / 200$

$$= (9 \times 20) / (10 \times 20)$$

$$= 9 / 10$$

$18 / 20$ and $27 / 30$ are two more fractions

(iii) $660 / 990$

$$= (2 \times 330) / (3 \times 330)$$

$$= 2 / 3$$

$20 / 30$ and $200 / 300$ are two more fractions

(iv) $180 / 360$

$$= (1 \times 180) / (2 \times 180)$$

$$= 1 / 2$$

20 / 40 and 30 / 60 are two more fractions

(v) $220 / 550$

$$= (2 \times 110) / (5 \times 110)$$

$$= 2 / 5$$

20 / 50 and 40 / 100 are two more fractions

∴ The equivalent fractions are

(i) $250 / 100 = (d) 5 / 8$

(ii) $180 / 200 = (e) 9 / 10$

(iii) $660 / 990 = (a) 2 / 3$

(iv) $180 / 360 = (c) 1 / 2$

(v) $220 / 550 = (b) 2 / 5$