

EXERCISE 14(D)

1. Simplify:

(i) $3/7 \times 2/5$

(ii) $4/9 \times 3/5$

(iii) $5/12 \times 8$

(iv) $7/6$ of $3/14$

(v) $3\frac{3}{8} \times 3\frac{6}{7}$

Solution:

(i) $3/7 \times 2/5$

The given expression can be simplified as below

$$\begin{aligned} 3/7 \times 2/5 &= (3 \times 2) / (7 \times 5) \\ &= 6/35 \end{aligned}$$

Hence, the simplified form of the given expression is $6/35$

(ii) $4/9 \times 3/5$

The given expression can be simplified as below

$$\begin{aligned} 4/9 \times 3/5 &= (4 \times 3) / (9 \times 5) \\ &= (4 \times 1) / (3 \times 5) \\ &= 4/15 \end{aligned}$$

Hence, the simplified form of the given expression is $4/15$

(iii) $5/12 \times 8$

The given expression can be simplified as below

$$\begin{aligned} 5/12 \times 8/1 &= (5 \times 8) / (12 \times 1) \\ &= (5 \times 2) / (3 \times 1) \\ &= 10/3 \\ &= 3\frac{1}{3} \end{aligned}$$

Hence, the simplified form of the given expression is $3\frac{1}{3}$

(iv) $7/6$ of $3/14$

The given expression can be simplified as below

$$\begin{aligned} 7/6 \times 3/14 &= (1 \times 1) / (2 \times 2) \\ &= 1/4 \end{aligned}$$

Hence, the simplified form of the given expression is $1/4$

(v) $3\frac{3}{8} \times 3\frac{6}{7}$

The given expression can be simplified as below

$$3\frac{3}{8} \times 3\frac{6}{7} = (27 \times 27) / (8 \times 7)$$

$$= 729 / 56$$

$$= 13\frac{1}{56}$$

Hence, the simplified form of the given expression is $13\frac{1}{56}$

2. Simplify:

(i) $2/3 \div 1\frac{1}{5}$

(ii) $4\frac{1}{2} \div 4/9$

(iii) $1 \div 2/5$

(iv) $4/9 \div 4/9$

(v) $2\frac{1}{3} \div 1\frac{3}{4}$

Solution:

(i) $2/3 \div 1\frac{1}{5}$

The given expression can be simplified as below

$$2/3 \div 6/5 = (2 \times 5) / (3 \times 6)$$

$$= 5/9$$

Hence, the simplified form of the given expression is $5/9$

(ii) $4\frac{1}{2} \div 4/9$

The given expression can be simplified as below

$$9/2 \div 4/9 = (9 \times 9) / (2 \times 4)$$

$$= 81/8$$

$$= 10\frac{1}{8}$$

Hence, the simplified form of the given expression is $10\frac{1}{8}$

(iii) $1 \div 2/5$

The given expression can be simplified as below

$$1/1 \div 2/5 = (1 \times 5) / (1 \times 2)$$

$$= 5/2$$

$$= 2\frac{1}{2}$$

Hence, the simplified form of the given expression is $2\frac{1}{2}$

(iv) $4/9 \div 4/9$

The given expression can be simplified as below

$$4/9 \div 4/9 = (4 \times 9) / (9 \times 4)$$

$$= 1$$

Hence, the simplified form of the given expression is 1

$$(v) 2\frac{1}{3} \div 1\frac{3}{4}$$

The given expression can be simplified as below

$$2\frac{1}{3} \div 1\frac{3}{4} = (7 \times 4) / (3 \times 7)$$

$$= 4/3$$

$$= 1\frac{1}{3}$$

Hence, the simplified form of the given expression is $1\frac{1}{3}$

3. Simplify:

$$(i) 1/4 \text{ of } 2\frac{2}{7} \div 3/5$$

$$(ii) 1\frac{1}{4} \times 1/2 \div 1\frac{1}{3}$$

$$(iii) 6\frac{1}{7} \times 0 \times 5\frac{3}{8}$$

$$(iv) 3/4 \times 1\frac{1}{3} \div 3/7 \text{ of } 2\frac{5}{8}$$

$$(v) 2\frac{1}{4} \div 2/7 \text{ of } 1\frac{1}{3} \times 2/3$$

Solution:

$$(i) 1/4 \text{ of } 2\frac{2}{7} \div 3/5$$

The given expression can be simplified as follows:

$$1/4 \times 16/7 \div 3/5 = 4/7 \div 3/5$$

$$= (4 \times 5) / (7 \times 3)$$

$$= 20/21$$

Hence, 20/21 is the simplified form of the given expression

$$(ii) 1\frac{1}{4} \times 1/2 \div 1\frac{1}{3}$$

The given expression can be simplified as follows

$$1\frac{1}{4} \times 1/2 \div 1\frac{1}{3} = 5/4 \times 1/2 \times 3/4$$

$$= 5/8 \times 3/4$$

$$= 15 / 32$$

Hence, $15 / 32$ is the simplified form of the given expression

$$(iii) 6\frac{1}{7} \times 0 \times 5\frac{3}{8}$$

The given expression can be simplified as follows

$$6\frac{1}{7} \times 0 \times 5\frac{3}{8} = (43 \times 0 \times 43) / (7 \times 0 \times 8)$$

$$= 0$$

Hence, 0 is the simplified form of the given expression

$$(iv) 3/4 \times 1\frac{1}{3} \div 3/7 \text{ of } 2\frac{5}{8}$$

The given expression can be simplified as follows

$$3/4 \times 1\frac{1}{3} \div 3/7 \text{ of } 2\frac{5}{8} = 3/4 \times 4/3 \div 9/8$$

$$\because 3/7 \text{ of } 2\frac{5}{8} = 3/7 \times 21/8 = 9/8$$

$$= 3/4 \times 4/3 \times 8/9$$

$$= 8/9$$

Hence, $8/9$ is the simplified form of the given expression

$$(v) 2\frac{1}{4} \div 2/7 \text{ of } 1\frac{1}{3} \times 2/3$$

The given expression can be simplified as follows

$$[2/7 \text{ of } 1\frac{1}{3} = 2/7 \times 4/3 = 8/21]$$

We get

$$= 9/4 \div 8/21 \times 2/3$$

$$= 9/4 \times 21/8 \times 2/3$$

$$= 63/16$$

$$= 3\frac{15}{16}$$

Hence, $3\frac{15}{16}$ is the simplified form of the given expression

4. Simplify:

$$(i) 5 - (8/11 - 3\frac{3}{11})$$

$$(ii) 1/2 \div (7/8 - 3/5)$$

$$(iii) 2\frac{1}{3} \div (5\frac{1}{2} + 3\frac{3}{4})$$

(iv) $(3\frac{7}{8} - 3\frac{3}{5}) \div 1/2$

(v) $4/7 \div (1/3 \times 2\frac{4}{5})$

Solution:

(i) $5 - (8/11 - 3\frac{3}{11})$

The given expression can be simplified as below

$$\begin{aligned} 5 - (8/11 - 3\frac{3}{11}) &= 5 - (8/11 - 36/11) \\ &= 5 - (8 - 36)/11 \\ &= 5 - (-28/11) \end{aligned}$$

On further calculation, we get

$$\begin{aligned} &= 5/1 + 28/11 \\ &= 83/11 \\ &= 7\frac{6}{11} \end{aligned}$$

Hence, $7\frac{6}{11}$ is the simplified form of the given expression

(ii) $1/2 \div (7/8 - 3/5)$

The given expression can be simplified as below

$$\begin{aligned} 1/2 \div (7/8 - 3/5) &= 1/2 \div (5 \times 7 - 8 \times 3)/40 \\ &= 1/2 \div (35 - 24)/40 \\ &= 1/2 \div (11/40) \\ &= 1/2 \times 40/11 \end{aligned}$$

We get

$$\begin{aligned} &= 20/11 \\ &= 1\frac{9}{11} \end{aligned}$$

Hence, $1\frac{9}{11}$ is the simplified form of the given expression

(iii) $2\frac{1}{3} \div (5\frac{1}{2} + 3\frac{3}{4})$

The given expression can be simplified as below

$$\begin{aligned} 2\frac{1}{3} \div (5\frac{1}{2} + 3\frac{3}{4}) &= 7/3 \div (11/2 + 15/4) \\ &= 7/3 \div (2 \times 11 + 1 \times 15)/4 \end{aligned}$$

On further calculation, we get

$$= 7/3 \div (22 + 15)/4$$

$$= 7/3 \div (37/4)$$

$$= 7/3 \times 4/37$$

$$= 28/111$$

Hence, 28 / 111 is the simplified form of the given expression

$$(iv) (3\frac{7}{8} - 3\frac{3}{5}) \div 1/2$$

The given expression can be simplified as below

$$(3\frac{7}{8} - 3\frac{3}{5}) \div 1/2 = (31/8 - 18/5) \div 1/2$$

By taking LCM, we get

$$= [(31 \times 5 - 18 \times 8) / (8 \times 5)] \div 1/2$$

$$= (155 - 144) / 40 \div 1/2$$

$$= (11/40) \div 1/2$$

By calculating further, we get

$$= 11/40 \times 2/1$$

$$= 11/20$$

Hence, 11 / 20 is the simplified form of the given expression

$$(v) 4/7 \div (1/3 \times 2\frac{4}{5})$$

The given expression can be simplified as below

$$4/7 \div (1/3 \times 2\frac{4}{5}) = 4/7 \div (1/3 \times 14/5)$$

$$= 4/7 \div (14/15)$$

On further calculation, we get

$$= 4/7 \times 15/14$$

$$= 2/7 \times 15/7$$

$$= 30/49$$

Hence, 30 / 49 is the simplified form of the given expression

5. Simplify

$$(i) (1/2 + 1/3) \div (1/4 - 1/6)$$

$$(ii) (24/35 \div 6/7 + 5/9) \times 3/4$$

$$(iii) 3/4 \text{ of } 6\frac{1}{8} - 2/3 \text{ of } 2\frac{1}{4}$$

$$(iv) 7/30 \text{ of } (1/3 + 7/15) \div (5/6 - 3/5)$$

$$(v) 2\frac{1}{2} - 3\frac{1}{2} \times 1\frac{3}{4} + 2\frac{1}{2}$$

Solution:

$$(i) (1/2 + 1/3) \div (1/4 - 1/6)$$

The given expression can be simplified as follows

$$(1/2 + 1/3) \div (1/4 - 1/6) = [(3 + 2)/6] \div [(3 - 2)/12]$$

On further calculation, we get

$$= (5/6) \div (1/12)$$

$$= 5/6 \times 12/1$$

$$= 5 \times 2$$

$$= 10$$

Hence, the simplified form of the given expression is 10

(ii) $(24/35 \div 6/7 + 5/9) \times 3/4$

The given expression can be simplified as follows

$$(24/35 \div 6/7 + 5/9) \times 3/4 = (24/35 \times 7/6 + 5/9) \times 3/4$$

$$= (4/5 + 5/9) \times 3/4$$

By taking LCM, we get

$$= [(36 + 25)/45] \times 3/4$$

$$= (61/45) \times 3/4$$

We get

$$= 61/60$$

$$= 1\frac{1}{60}$$

Hence, the simplified form of the given expression is $1\frac{1}{60}$

(iii) $3/4$ of $6\frac{1}{8}$ - $2/3$ of $2\frac{1}{4}$

The given expression can be simplified as below

$$3/4 \text{ of } 6\frac{1}{8} - 2/3 \text{ of } 2\frac{1}{4} = 3/4 \text{ of } 49/8 - 2/3 \text{ of } 9/4$$

$$= 3/4 \times 49/8 - 2/3 \text{ of } 9/4$$

$$= 147/32 - 2/3 \times 9/4$$

We get

$$= 147/32 - 3/2$$

On taking LCM, we get

$$= [(147 - 48)]/32$$

$$= 99/32$$

$$= 3\frac{3}{32}$$

Hence, the simplified form of the given expression is $3\frac{3}{32}$

(iv) $7/30$ of $(1/3 + 7/15) \div (5/6 - 3/5)$

The given expression can be simplified as below

$$7/30 \text{ of } (1/3 + 7/15) \div (5/6 - 3/5) = 7/30 \text{ of } [(5 + 7)/15] \div [(25 - 18)/30]$$

We get

$$\begin{aligned} &= 7/30 \text{ of } (4/5) \div (7/30) \\ &= 7/30 \times 4/5 \times 30/7 \\ &= 4/5 \end{aligned}$$

Hence, the simplified form of the given expression is $4/5$

(v) $2\frac{1}{2} - 3\frac{1}{2} \times 1\frac{3}{4} + 2\frac{1}{2}$

The given expression can be simplified as below

$$\begin{aligned} 2\frac{1}{2} - 3\frac{1}{2} \times 1\frac{3}{4} + 2\frac{1}{2} &= 5/2 - 7/2 \times 7/4 + 5/2 \\ &= 5/2 - 49/8 + 5/2 \\ &= 5/2 + 5/2 - 49/8 \end{aligned}$$

By taking LCM, we get

$$\begin{aligned} &= (20 + 20 - 49) / 8 \\ &= (40 - 49) / 8 \\ &= -9/8 \\ &= -1\frac{1}{8} \end{aligned}$$

Hence, $-1\frac{1}{8}$ is the simplified form of the given expression