Simplification
Exercise 6A

Q1

Answer :

Given expression:

$= 21 - 12 \div 3 \times 2$

$= 21 - 4 \times 2$ [Performing division]

$= 21 - 8$ [Performing multiplication]

$= 13$ [Performing subtraction]

Q2

Answer :

Given expression:

$= 16 + 8 \div 4 - 2 \times 3$

$= 16 + 2 - 2 \times 3$ [Performing division]

$= 16 + 2 - 6$ [Performing multiplication]

$= 18 - 6$ [Performing addition]

$= 12$ [Performing subtraction]

Q3

Answer :

Given expression:

$= 13 - (12 - 6 \div 3)$

$= 13 - (12 - 2)$ [Performing division]

$= 13 - 10 = 3$ [Performing subtraction]

Q4

Answer :

Given expression:

$= 19 - [4 + \{16 - (12 - 2)\}]$

$= 19 - [4 + \{16 - 10\}]$ [Removing parentheses]

$= 19 - [4 + 6]$ [Removing braces]

$= 19 - 10$ [Removing square brackets]

$= 9$

Q5

Answer :

Given expression:

$= 36 - [18 - \{14 - (15 - 4 \div 2 \times 2)\}]$

$= 36 - [18 - \{14 - (15 - 2 \times 2)\}]$ [Performing division]

$= 36 - [18 - \{14 - (15 - 4)\}]$ [Performing multiplication]

$= 36 - [18 - \{14 - 11\}]$ [Removing parentheses]

$= 36 - [18 - 3]$ [Removing braces]

$= 36 - 15$ [Removing square brackets]

$= 21$

Q6

Answer :

Given expression:

$= 27 - [18 - \{16 - (5 - \overline{4-1})\}]$

$= 27 - [18 - \{16 - (5 - 3)\}]$ [Removing bar]

$= 27 - [18 - \{16 - 2\}]$ [Removing parentheses]

$= 27 - [18 - 14]$ [Removing braces]

$= 27 - 4$ [Removing square brackets]

$= 23$

Q7

Answer :

Given expression:

$= 4\frac{4}{5} \div \frac{3}{5} \text{ of } 5 + \frac{4}{5} \times \frac{3}{10} - \frac{1}{5}$

$= 4\frac{4}{5} \div \frac{3}{5} \times \frac{5}{1} + \frac{4}{5} \times \frac{3}{10} - \frac{1}{5}$ (Removing 'of')

$= \frac{24}{5} \div \frac{3}{1} + \frac{4}{5} \times \frac{3}{10} - \frac{1}{5}$

$= \frac{24}{5} \times \frac{1}{3} + \frac{4}{5} \times \frac{3}{10} - \frac{1}{5}$ (Removing '÷')

$= \frac{8}{5} + \frac{4}{5} \times \frac{3}{10} - \frac{1}{5}$ (Removing '×')

$= \frac{8}{5} + \frac{6}{25} - \frac{1}{5}$ (Removing '×')

$= \frac{40+6-5}{25} = \frac{41}{25} = 1\frac{16}{25}$

Q8

Answer :

Given expression:

$= \left(\frac{2}{3} + \frac{4}{9}\right) \text{ of } \frac{3}{5} \div 1\frac{2}{3} \times 1\frac{1}{4} - \frac{1}{3}$

$= \left(\frac{6+4}{9}\right) \text{ of } \frac{3}{5} \div 1\frac{2}{3} \times 1\frac{1}{4} - \frac{1}{3}$ (Removing parentheses)

$= \frac{10}{9} \times \frac{3}{5} \div 1\frac{2}{3} \times 1\frac{1}{4} - \frac{1}{3}$ (Removing 'of')

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

$= \frac{2}{3} \times \frac{3}{5} \times \frac{5}{4} - \frac{1}{3}$ (Removing '÷')

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

$= \frac{1}{2} - \frac{1}{3}$ (Removing '×')

$= \frac{(3-2)}{6} = \frac{1}{6}$

Q9

Answer :

The given expression

$= 7\frac{1}{3} \div \frac{2}{3} \text{ of } 2\frac{1}{5} + 1\frac{3}{8} \div 2\frac{3}{4} - 1\frac{1}{2}$

$= \frac{22}{3} \div \frac{2}{3} \text{ of } \frac{11}{5} + \frac{11}{8} \div \frac{11}{4} - \frac{3}{2}$

$= \frac{22}{3} \div \frac{2}{3} \times \frac{11}{5} + \frac{11}{8} \div \frac{11}{4} - \frac{3}{2}$ (Removing 'of')

$= \frac{22}{3} \div \frac{22}{15} + \frac{11}{8} \div \frac{11}{4} - \frac{3}{2}$

$= \frac{22}{3} \times \frac{15}{22} + \frac{11}{8} \div \frac{11}{4} - \frac{3}{2}$ (Removing '÷')

$= 5 + \frac{11}{8} \times \frac{4}{11} - \frac{3}{2}$ (Removing '÷')

$= 5 + \frac{1}{2} - \frac{3}{2}$ (On simplifying)

$= \frac{10+1-3}{2} = \frac{8}{2} = 4$

Q10

Answer :

Given expression:

$= 5\frac{1}{7} - \left\{3\frac{3}{10} \div \left(2\frac{4}{5} - \frac{7}{10}\right)\right\}$

$= \frac{36}{7} - \left\{\frac{33}{10} \div \left(\frac{14}{5} - \frac{7}{10}\right)\right\}$

$= \frac{36}{7} - \left\{\frac{33}{10} \div \left(\frac{28-7}{10}\right)\right\}$

$= \frac{36}{7} - \left\{\frac{33}{10} \div \frac{21}{10}\right\}$ (Removing parentheses)

$= \frac{36}{7} - \left\{\frac{33}{10} \times \frac{10}{21}\right\}$ (Removing ' $\div$ ')

$= \frac{36}{7} - \frac{11}{7}$ (Removing braces)

$= \frac{36-11}{7} = \frac{25}{7} = 3\frac{4}{7}$ (Simplifying)

Q11

Answer :

Given expression:

$= 9\frac{3}{4} \div \left[2\frac{1}{6} + \left\{4\frac{1}{3} - \left(1\frac{1}{2} + 1\frac{3}{4}\right)\right\}\right]$

$= \frac{39}{4} \div \left[\frac{13}{6} + \left\{\frac{13}{3} - \left(\frac{3}{2} + \frac{7}{4}\right)\right\}\right]$

$= \frac{39}{4} \div \left[\frac{13}{6} + \left\{\frac{13}{3} - \left(\frac{6+7}{4}\right)\right\}\right]$

$= \frac{39}{4} \div \left[\frac{13}{6} + \left\{\frac{13}{3} - \frac{13}{4}\right\}\right]$ (Removing parentheses)

$= \frac{39}{4} \div \left[\frac{13}{6} + \left\{\frac{52-39}{12}\right\}\right]$

$= \frac{39}{4} \div \left[\frac{13}{6} + \frac{13}{12}\right]$ (Removing braces)

$= \frac{39}{4} \div \left[\frac{26+13}{12}\right]$

$= \frac{39}{4} \div \frac{39}{12}$ (Removing square brackets)

$= \frac{39}{4} \times \frac{12}{39} = 3$ (Removing ' $\div$ ')

Q12

Answer :

Given expression:

$= 4\frac{1}{10} - \left[2\frac{1}{2} - \left\{\frac{5}{6} - \left(\frac{2}{5} + \frac{3}{10} - \frac{4}{15}\right)\right\}\right]$

$= \frac{41}{10} - \left[\frac{5}{2} - \left\{\frac{5}{6} - \left(\frac{2}{5} + \frac{3}{10} - \frac{4}{15}\right)\right\}\right]$

$= \frac{41}{10} - \left[\frac{5}{2} - \left\{\frac{5}{6} - \left(\frac{12+9-8}{30}\right)\right\}\right]$

$= \frac{41}{10} - \left[\frac{5}{2} - \left\{\frac{5}{6} - \frac{13}{30}\right\}\right]$ (Removing parentheses)

$= \frac{41}{10} - \left[\frac{5}{2} - \left\{\frac{25-13}{30}\right\}\right]$

$= \frac{41}{10} - \left[\frac{5}{2} - \frac{12}{30}\right]$ (Removing braces)

$= \frac{41}{10} - \left[\frac{75-12}{30}\right]$

$= \frac{41}{10} - \frac{63}{30}$ (Removing square brackets)

$= \frac{123-63}{30} = \frac{60}{30} = 2$

Q13

Answer :

Given expression:

$= 1\frac{5}{6} + \left[2\frac{2}{3} - \left\{3\frac{3}{4}\left(3\frac{4}{5} \div 9\frac{1}{2}\right)\right\}\right]$

$= \frac{11}{6} + \left[\frac{8}{3} - \left\{\frac{15}{4}\left(\frac{19}{5} \div \frac{19}{2}\right)\right\}\right]$

$= \frac{11}{6} + \left[\frac{8}{3} - \left\{\frac{15}{4}\left(\frac{19}{5} \times \frac{2}{19}\right)\right\}\right]$

$= \frac{11}{6} + \left[\frac{8}{3} - \left\{\frac{15}{4} \times \frac{2}{5}\right\}\right]$ (Removing parentheses)

$= \frac{11}{6} + \left[\frac{8}{3} - \frac{3}{2}\right]$ (Removing braces)

$= \frac{11}{6} + \left[\frac{16-9}{6}\right]$

$= \frac{11}{6} + \frac{7}{6}$ (Removing square brackets)

$= \frac{18}{6} = 3$

Q14

Answer :

Given expression:

$= 4\frac{4}{5} \div \left\{2\frac{1}{5} - \frac{1}{2}\left(1\frac{1}{4} - \overline{\frac{1}{4} - \frac{1}{5}}\right)\right\}$

$= \frac{24}{5} \div \left\{\frac{11}{5} - \frac{1}{2}\left(\frac{5}{4} - \overline{\frac{1}{4} - \frac{1}{5}}\right)\right\}$

$= \frac{24}{5} \div \left\{\frac{11}{5} - \frac{1}{2}\left(\frac{5}{4} - \frac{1}{20}\right)\right\}$ (Removing bar)

$= \frac{24}{5} \div \left\{\frac{11}{5} - \frac{1}{2}\left(\frac{25-1}{20}\right)\right\}$

$= \frac{24}{5} \div \left\{\frac{11}{5} - \frac{1}{2} \times \frac{24}{20}\right\}$ (Removing parentheses)

$= \frac{24}{5} \div \left\{\frac{11}{5} - \frac{12}{20}\right\}$ (Removing '$\times$')

$= \frac{24}{5} \div \left\{\frac{44-12}{20}\right\}$

$= \frac{24}{5} \div \frac{32}{20}$ (Removing braces)

$= \frac{24}{5} \times \frac{20}{32}$ (Removing '$\div$')

$= \frac{3}{4} \times 4 = 3$

Q15

Answer :

Given expression:

$= 7\frac{1}{2} - \left[2\frac{1}{4} \div \left\{1\frac{1}{4} - \frac{1}{2}\left(\frac{3}{2} - \overline{\frac{1}{3} - \frac{1}{6}}\right)\right\}\right]$

$= \frac{15}{2} - \left[\frac{9}{4} \div \left\{\frac{5}{4} - \frac{1}{2}\left(\frac{3}{2} - \overline{\frac{1}{3} - \frac{1}{6}}\right)\right\}\right]$

$= \frac{15}{2} - \left[\frac{9}{4} \div \left\{\frac{5}{4} - \frac{1}{2}\left(\frac{3}{2} - \frac{1}{6}\right)\right\}\right]$ (Removing bar)

$= \frac{15}{2} - \left[\frac{9}{4} \div \left\{\frac{5}{4} - \frac{1}{2}\left(\frac{9-1}{6}\right)\right\}\right]$

$= \frac{15}{2} - \left[\frac{9}{4} \div \left\{\frac{5}{4} - \frac{1}{2} \times \frac{4}{3}\right\}\right]$ (Removing parentheses)

$= \frac{15}{2} - \left[\frac{9}{4} \div \left\{\frac{5}{4} - \frac{2}{3}\right\}\right]$ (Removing '$\times$')

$= \frac{15}{2} - \left[\frac{9}{4} \div \left\{\frac{15-8}{12}\right\}\right]$ (Removing braces)

$= \frac{15}{2} - \left[\frac{9}{4} \div \frac{7}{12}\right]$

$= \frac{15}{2} - \left[\frac{9}{4} \times \frac{12}{7}\right]$ (Removing '$\div$')

$= \frac{15}{2} - \frac{27}{7}$ (Removing square brackets)

$= \frac{105-54}{14} = \frac{51}{14} = 3\frac{9}{14}$

Simplification
Exercise 6B

Q1

Answer :

(c) 18

Explanation:
= 8 + 4 ÷ 2 × 5
= 8 + 2 × 5
= 8 + 10 = 18

Q2

Answer :

(b) 12

Explanation:
= 54 ÷ 3 of 6 + 9
= 54 ÷ (3 x 6) + 9
= 54 ÷ 18 + 9
= 3 + 9 = 12

Q3

Answer :

(b) 3

Explanation:
= 13 - (12 - 6 ÷ 3)
= 13 - (12 - 2)
= 13 - 10 = 3

Q4

Answer :

(a) 7

Explanation:
= 1001 ÷ 11 of 13
= 1001 ÷ (11 x 13)
= 1001 ÷ 143 = 7

Q5

Answer :

(b) 121

Explanation:
Given expression:
= 133 + 28 ÷ 7 - 8 × 2
= 133 + 4 - 8 ×2 [Performing division]
= 133 + 4 - 16 [Performing multiplication]
= 137 - 16 [Performing addition]
= 121 [Performing subtraction]

Q6

Answer :

(a) 3636

Explanation:
Given expression:
= 3640 - 14 ÷ 7 × 2
= 3640 - 2 ×2 [Performing division]
= 3640 - 4 [Performing multiplication]
= 3636 [Performing subtraction]

Q7

Answer :

(b) 920

Explanation:
Given expression:
= 100 × 10 — 100 + 2000 ÷ 100
= 100 × 10 — 100 + 20 [Performing division]
= 1000 — 100 + 20 [Performing multiplication]
= 1020 —100 [Performing addition]
= 920 [Performing subtraction]

Q8

Answer :

(b) 23
Explanation:

Given expression:
= 27 — [18 — {16 — (5 — $\overline{4-1}$)}]
= 27 — [18 — {16 — (5 — 3)}] (Removing bar)
= 27 — [18 — {16 — 2}] (Removing parentheses)
= 27 — [18 — 14] (Removing braces)
= 27 — 4 (Removing square brackets)
= 23

Q9

Answer :

(a) 29

Explanation:

Given expression:

$= 32 - [48 \div \{36 - (27 - \overline{16 - 9})\}]$

$= 32 - [48 \div \{36 - (27 - 7)\}]$ (Removing bar)

$= 32 - [48 \div \{36 - 20\}]$ (Removing parentheses)

$= 32 - [48 \div 16]$ (Removing braces)

$= 32 - 3$ (Removing square brackets)

$= 29$

Q10

Answer :

(a) 6

Explanation:

Given expression:

$= 8 - [28 \div \{34 - (36 - 18 \div 9 \times 8)\}]$ [Performing division]

$= 8 - [28 \div \{34 - (36 - 2 \times 8)\}]$ [Performing multiplication]

$= 8 - [28 \div \{34 - (36 - 16)\}]$

$= 8 - [28 \div \{34 - 20\}]$ [Removing parentheses]

$= 8 - [28 \div 14]$ [Removing braces]

$= 8 - 2 = 6$ [Removing square brackets]