Unit 2 Simplification

Review Exercise 2

1. Choose the correct option.

(i) **3 + 3 × 3 =** ____

(a) 12 (b) 18 (c) 15 (d) 21

(ii) **9 ÷ 3 × 3 =** ____

(a) 9 (b) 1 (c) 3 (d) 2

(iii) **8 ÷ 2 + 4 =** ____

(a) 8 (b) $\frac{4}{3}$ (c) 6 (d) 2

(iv) **10 ÷ (2 + 8) =** ____

(a) 1 (b) 13 (c) 5 (d) 3

(v) **9 × 3 – 1 =** ____

(a) 18 (b) 26 (c) 12 (d) 24

2. Simplify:

(i) $8\times9-\left[32-\left\{12\div\left(8-\overline{4-2}\right)\right\}\right]$

Solution: To solve this expression use BODMAS rule

$=8\times9-\left[32-\left\{12\div\left(8-\overline{4-2}\right)\right\}\right]$ Solve vinculum.

$=8\times9-\left[32-\left\{12\div\left(8-2\right)\right\}\right]$ Apply subtraction in curved brackets.

$=8\times9-\left[32-\left\{12\div6\right\}\right]$ Apply division in curly brackets.

$=8\times9-\left[32-2\right]$ Apply subtraction in square brackets.

$=8\times9-30$ Apply multiplication before subtraction.

$=72-30$ Apply subtraction.

$=42$

(ii) $12\times8-\left[64-\left\{18\div\left(9-\overline{6-2}\right)\right\}\right]$

Solution: To solve this expression use BODMAS rule

$=12\times8-\left[64-\left\{18\div\left(9-\overline{6-2}\right)\right\}\right]$ Solve vinculum.

$=12\times8-\left[64-\left\{18\div\left(9-4\right)\right\}\right]$ Apply subtraction in curved brackets.

$=12\times8-\left[64-\left\{18\div5\right\}\right]$ Apply division in curly brackets.

$=12\times8-\left[64-3.6\right]$ Apply subtraction in square brackets.

$=12\times8-60.4$ Apply multiplication before subtraction.

$=96-60.4$ Apply subtraction.

$=35.6$

(iii) $2\frac{3}{8}+\left[\frac{12}{11}\times 22-\left\{100\div 10-\left(3\frac{1}{7}-2\frac{1}{3}\right)\right\}\right]$

Solution: To solve this expression use BODMAS rule

$=2\frac{3}{8}+\left[\frac{12}{11}\times 22-\left\{100\div 10-\left(3\frac{1}{7}-2\frac{1}{3}\right)\right\}\right]$ Change mixed numbers int o improper fractions.

$=\frac{19}{8}+\left[\frac{12}{11}\times 22-\left\{100\div 10-\left(\frac{22}{7}-\frac{7}{3}\right)\right\}\right]$ Solve subtraction in curved brackets.

$=\frac{19}{8}+\left[\frac{12}{11}\times 22-\left\{100\div 10-\left(\frac{66-49}{21}\right)\right\}\right]$ Take LCM to subtract fractions.

$=\frac{19}{8}+\left[\frac{12}{11}\times 22-\left\{100\div 10-\frac{17}{21}\right\}\right]$ Apply division in curly brackets.

$=\frac{19}{8}+\left[\frac{12}{11}\times 22-\left\{10-\frac{17}{21}\right\}\right]$ Take LCM to subtract.

$=\frac{19}{8}+\left[\frac{12}{11}\times 22-\left\{\frac{210-17}{21}\right\}\right]$ Solve curly brackets.

$=\frac{19}{8}+\left[\frac{12}{11}\times 22-\frac{193}{21}\right]$ Apply division in square brackets.

$=\frac{19}{8}+\left[\frac{12}{\cancel{11}}\times \cancel{22}^{2}-\frac{193}{21}\right]$ Apply multiplication in square brackets.

$=\frac{19}{8}+\left[24-\frac{193}{21}\right]$ Apply subtraction in square brackets.

$=\frac{19}{8}+\left[\frac{504-193}{21}\right]$ Simplify fractions in square brackets.

$=\frac{19}{8}+\frac{311}{21}$ Apply addition.

$=\frac{399+2488}{168}$ Take LCM to add fractions.

$=\frac{2887}{168}$ or $17\frac{31}{168}$

(iv) $8\frac{3}{4}-\left[\frac{13}{9}\times 18-\left\{91\div 7-\left(1\frac{1}{8}-\frac{1}{12}\right)\right\}\right]$

Solution: To solve this expression use BODMAS rule

$= 8\frac{3}{4} - \left[\frac{13}{9} \times 18 - \left\{91 \div 7 - \left(1\frac{1}{8} - \frac{1}{12}\right)\right\}\right]$ Change mixed numbers int o improper fractions.

$= \frac{35}{4} - \left[\frac{13}{9} \times 18 - \left\{91 \div 7 - \left(\frac{9}{8} - \frac{1}{12}\right)\right\}\right]$ Solve subtraction in curved brackets.

$= \frac{35}{4} - \left[\frac{13}{9} \times 18 - \left\{91 \div 7 - \left(\frac{27-2}{24}\right)\right\}\right]$ Take LCM to subtract fractions.

$= \frac{35}{4} - \left[\frac{13}{9} \times 18 - \left\{91 \div 7 - \left(\frac{25}{24}\right)\right\}\right]$ Apply division in curly brackets.

$= \frac{35}{4} - \left[\frac{13}{9} \times 18 - \left\{13 - \left(\frac{25}{24}\right)\right\}\right]$ Apply subtrcation in curly brackets.

$= \frac{35}{4} - \left[\frac{13}{9} \times 18 - \left\{\frac{312-25}{24}\right\}\right]$ Take LCM to subtract fractions.

$= \frac{35}{4} - \left[\frac{13}{9} \times 18 - \frac{287}{24}\right]$ Apply division in square brackets.

$= \frac{35}{4} - \left[\frac{13}{\cancel{9}} \times \cancel{18}^{2} - \frac{287}{24}\right]$ Apply multiplication in square brackets.

$= \frac{35}{4} - \left[26 - \frac{287}{24}\right]$ Apply subtrcation on fractions.

$= \frac{35}{4} - \left[\frac{624-287}{24}\right]$ Take LCM to subtract fractions.

$= \frac{35}{4} - \frac{337}{24}$ Apply subtrcation on fractions.

$= \frac{210-337}{24}$ Take LCM to subtract fractions.

$= -\frac{127}{24}$

(v) $7.25 + \left[8.5 \div \left\{2.6 \times 0.5 - (1.5 - 0.5)\right\}\right]$

Solution: To solve this expression use BODMAS rule

$= 7.25 + \left[8.5 \div \left\{2.6 \times 0.5 - (1.5 - 0.5)\right\}\right]$ Solve curved brackets.

$= 7.25 + \left[8.5 \div \left\{2.6 \times 0.5 - (1)\right\}\right]$ Apply multiplication.

$= 7.25 + \left[8.5 \div \left\{1.30 - 1\right\}\right]$ Apply subtraction in curly brackets.

$= 7.25 + \left[8.5 \div \left\{0.30\right\}\right]$ Apply division.

$= 7.25 + \left[28.33\right]$ Apply addition.

$= 35.58$

(vi) $12.35+\left[3.2\div\left\{3.6\times0.5-\left(2.5-1.5\right)\right\}\right]$

Solution: To solve this expression use BODMAS rule

$=12.35+\left[3.2\div\left\{3.6\times0.5-\left(2.5-1.5\right)\right\}\right]$ Solve curved brackets.

$=12.35+\left[3.2\div\left\{3.6\times0.5-1\right\}\right]$ Apply multiplication in curly brackets.

$=12.35+\left[3.2\div\left\{1.8-1\right\}\right]$ Apply subtraction in curly brackets.

$=12.35+\left[3.2\div0.8\right]$ Change decimal numbers to fractions.

$=12.35+\left[\frac{32}{10}\div\frac{8}{10}\right]$ Apply division in square brackets.

$=12.35+\left[\frac{{}^{4}\cancel{32}}{\cancel{10}}\times\frac{\cancel{10}}{\cancel{8}}\right]$ Change the symbol and take the reciprocal of fraction.

$=12.35+4$ Apply addition.

$=16.35$

(vii) $11.45+\left[9.8\div\left\{12.3-\left(3.5-2.5\right)\right\}\right]$

Solution: To solve this expression use BODMAS rule

$=11.45+\left[9.8\div\left\{12.3-\left(3.5-2.5\right)\right\}\right]$ Solve curved brackets.

$=11.45+\left[9.8\div\left\{12.3-1\right\}\right]$ Apply subtraction in curly brackets.

$=11.45+\left[9.8\div\left\{11.3\right\}\right]$ Apply division in square brackets.

$=11.45+\left[\frac{98}{10}\div\frac{113}{10}\right]$ Change decimal numbers to fractions.

$=11.45+\left[\frac{98}{\cancel{10}}\times\frac{\cancel{10}}{113}\right]$ Change the symbol and take the reciprocal of fraction.

$=11.45+\frac{98}{113}$ Simplify the fractions.

$=11.45+0.87$ Change fraction to decimal and apply addition.

$=12.32$