Rational Numbers
Exercise 4G

Q1

Answer :

(b) $\frac{-3}{5}$

$$33\overline{)55}(1$$
$$\underline{-33}$$
$$22\overline{)33}(1$$
$$\underline{-22}$$
$$11\overline{)22}(2$$
$$\underline{-22}$$
$$\times$$

H.C.F. of 33 and 55 is 11

$\frac{-33 \div 11}{55 \div 11} = \frac{-3}{5}$

Q2

Answer :

(b) $\frac{-6}{7}$

$$102\overline{)119}(1$$
$$\underline{-102}$$
$$17\overline{)102}(6$$
$$\underline{-102}$$
$$\times$$

H.C.F. of 102 and 119 is 17

$\frac{-102 \div 17}{119 \div 17} = \frac{-6}{7}$

The standard form of $\frac{-102}{119}$ is $\frac{-6}{7}$

Q3

Answer :

The correct option is (a).
The value of x is -14.

$$\left[x = \frac{7 \times 6}{-3} = \frac{\cancel{42}^{14}}{\cancel{-3}_1} = -14\right]$$

Q4

Answer :

The correct option is (c).
$\frac{14}{9}$ should be added to $\frac{-5}{9}$ to get 1.
Let the required number be x.

$$x + \left(\frac{-5}{9}\right) = 1$$

$$x = 1 - \frac{(-5)}{9} = \frac{9+5}{9} = \frac{14}{9}$$

Q5

Answer :

The correct option is (b).
Let the number that is to be subtracted be x.

$$\frac{-3}{4} - x = \frac{5}{6}$$
$$=> -x = \frac{5}{6} - \left(\frac{-3}{4}\right)$$
$$=> -x = \frac{5}{6} + \frac{3}{4}$$
$$=> -x = \frac{(5 \times 2) + (3 \times 3)}{12}$$
$$=> x = -\frac{19}{12}$$

Hence, $-\frac{19}{12}$ should be subtracted from $\frac{-3}{4}$ to get $\frac{5}{6}$.

Q6

Answer :

The correct option is (a).
$$\frac{5 \times -1}{-6 \times -1} = \frac{-5}{6}$$

L.C.M. of 6 and 12 is 12.
$$\therefore \frac{-5 \times 2}{6 \times 2} = \frac{-10}{12} \text{ and } \frac{-7 \times 1}{12 \times 1} = \frac{-7}{12}$$
Hence, $\frac{5}{-6}$ is smaller than $\frac{-7}{12}$.

Q7

Answer :

The correct option is (a).
$$\frac{2 \times -1}{-3 \times -1} = \frac{-2}{3}$$

L.C.M. of 3 and 5 is 15.
$$\therefore \frac{-2 \times 5}{3 \times 5} = \frac{-10}{15} \text{ and } \frac{-4 \times 3}{5 \times 3} = \frac{-12}{15}$$
Thus, $\frac{2}{-3}$ is greater than $\frac{-4}{5}$.

Q8

Answer :

The correct option is (c).
Reciprocal of -6 is $\frac{-1}{6}$.

Q9

Answer :

The correct option is (b).
Multiplicative inverse of $\frac{-2}{3}$ is $\frac{-3}{2}$.

Q10

Answer :

The correct option is (a).

$$-2\frac{1}{9} - 6$$

$$= \frac{-19}{9} - 6 = \frac{-19 - 54}{9}$$

$$= \frac{-73}{9} = -8\frac{1}{9}$$

Q11

Answer :

The correct option is (c).

$$\frac{-6}{13} - \frac{|-7|}{15}$$

L.C.M. of 13 and 15 is 195.

$$= \frac{-6}{13} - \frac{|-7|}{15}$$

$$= \frac{-90 + 91}{195}$$

$$= \frac{1}{195}$$

Q12

Answer :

The correct option is (b).

$$-2\frac{1}{3} + 4\frac{3}{5}$$

$$= \frac{-7}{3} + \frac{23}{5}$$

L.C.M. of 5 and 5 is 15.

$$= \frac{-35 + 69}{15}$$

$$= \frac{34}{15}$$

$$= 2\frac{4}{15}$$

Q13

Answer :

The correct option is (b).

$$\frac{2}{3} - 1\frac{5}{7}$$

$$= \frac{2}{3} - \frac{12}{7}$$

L.C.M. of 3 and 7 is 21.

$$= \frac{14 - 36}{21}$$

$$= \frac{-22}{21}$$

$$= -1\frac{1}{21}$$

Q14

Answer :

The correct option is (b).

$\frac{-5}{12}$ is greater than $\frac{-4}{9}$.

L.C.M. of 9 and 12 is 36.

$$\frac{-5 \times 3}{12 \times 3} = \frac{-15}{36}$$

$$\frac{-4 \times 4}{12 \times 4} = \frac{-16}{36}$$

$$(-15) > (-16)$$

$$\frac{-5}{12} > \frac{-4}{9}$$

Q15

Answer :

The correct option is (b).

$$\frac{-9}{14} + ? = -1$$

$$\therefore ? = -1 - \frac{(-9)}{14}$$

$$? = \frac{-14+9}{14}$$

$$? = \frac{-5}{14}$$

Q16

Answer :

$$\left(a\right) \frac{3}{4}$$

$$\frac{5}{4} - \frac{7}{6} - \frac{(-2)}{3}$$

L. C. M. of 4, 6 and 3 is 12.

$$= \frac{15-14+8}{12}$$

$$= \frac{23-14}{12}$$

$$= \frac{\cancel{9}^{3}}{\cancel{12}_{4}} = \frac{3}{4}$$

Q17

Answer :

(b) 2

$$1 \div \frac{1}{2}$$

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

$$= 2$$

Q18

Answer :

$$\left(a\right) \frac{-35}{18}$$

$$? = \frac{5}{12} \div \frac{(-3)}{14}$$

$$= \frac{5}{12} \times \frac{14}{(-3)}$$

$$= \frac{70}{-36}$$

$$= \frac{35 \times -1}{-18 \times -1}$$

$$? = \frac{-35}{18}$$

Q19

Answer :

(c) 0

$$0 \div \frac{-7}{5} = 0$$

Q20

Answer :

(d) Not defined

This is because $\frac{-3}{8} \div 0$ is not defined.