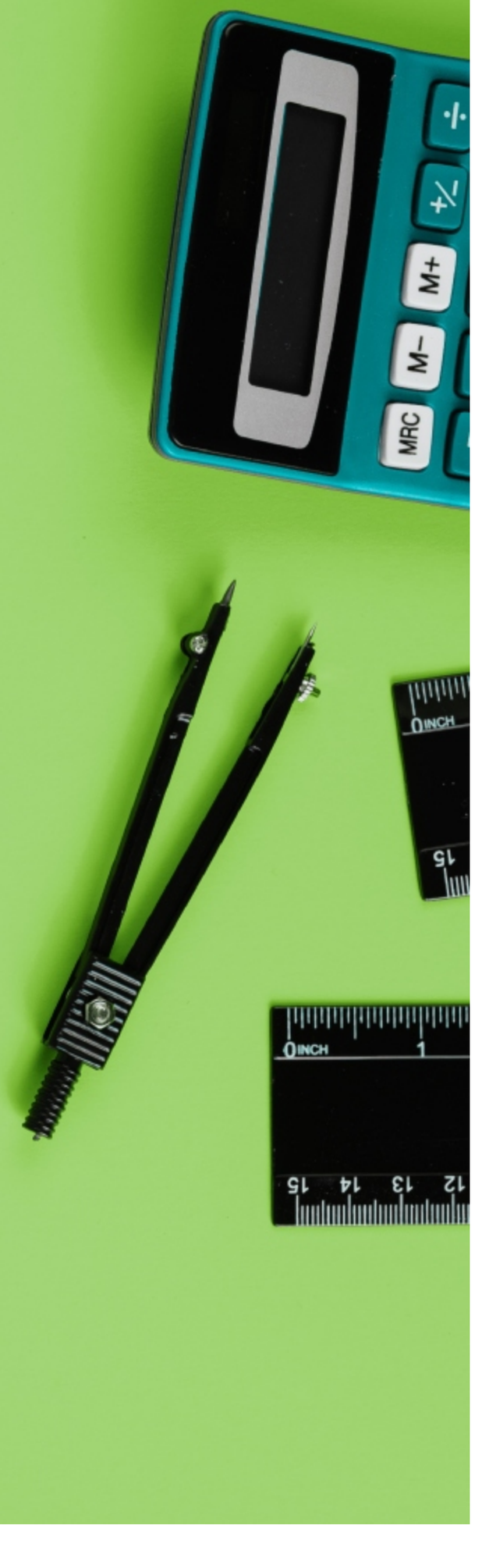
RD Sharma Solutions

Class 7

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Exercise 5-4

Q.1 Divide:

(i) 1 by $\frac{1}{2}$ (ii) 5 by $\frac{-5}{7}$ (iii) $\frac{-3}{4}$ by $\frac{-9}{16}$.

(iv) $\frac{-7}{8}$ by $\frac{-21}{16}$ (v) $\frac{7}{-4}$ by $\frac{63}{64}$ (vi) 0 by $\frac{-7}{5}$

(vii) $\frac{-3}{4}$ by -6 (viii) $\frac{2}{3}$ by $\frac{-7}{12}$

Solution: (i) $1 \div \frac{1}{2} = 1 \times \frac{2}{1} = \frac{2}{1} = 2$

(ii) $5 \div \frac{-5}{7} = \overset{1}{5} \times \frac{7}{-5_1} = \frac{7}{-1} = -7$

(iii) $-\frac{3}{4} \div \frac{-9}{16} = -\frac{\overset{1}{3}}{\cancel{4}} \times \frac{\overset{4}{16}}{-9_3} = \frac{4}{3}$

(iv) $\frac{-7}{8} \div \frac{-21}{16} = \frac{-7}{\overset{1}{8}} \times \frac{\overset{2}{16}}{-21_3} = \frac{2}{3}$

(v) $\frac{7}{-4}$ by $\frac{63}{64} = \frac{7}{-4} \div \frac{63}{-64} = \frac{\overset{1}{7}}{\cancel{-4}} \times \frac{\overset{16}{-64}}{\cancel{63}_9} = \frac{16}{9}$

(vi) $0 \div \frac{-7}{5} = 0 \times \frac{5}{-7} = \frac{5 \times 0}{1 \times -7} = \frac{0}{-7} = 0$

(vii) $-\frac{3}{4} \div -6 = -\frac{\overset{1}{3}}{4} \times \frac{1}{-6_2} = \frac{1}{8}$

(viii) $\frac{2}{3} \div \frac{-7}{12} = \frac{2}{3} \times \frac{\overset{4}{12}}{-7} = \frac{8}{-7} = \frac{-8}{7}$

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Q.2 Find the value and express as a rational number in standard form:

(i) $\frac{2}{5} \div \frac{26}{15}$ (ii) $\frac{10}{3} \div \frac{-35}{12}$ (iii) $-6 \div \left(\frac{-8}{17}\right)$

(iv) $\frac{40}{98} \div (-20)$

Solution: (i) $\frac{2}{5} \div \frac{+26}{15}$

$= \frac{2}{5} \times \frac{15}{+26} = \frac{3}{13}$

$= +\frac{3}{13}$

(ii) $\frac{10}{3} \div \frac{-35}{12} = \frac{10}{3} \times \frac{12}{-35} = \frac{2 \times 4}{1 \times -7}$

$= \frac{8}{-7} \times \frac{-1}{-1} = \frac{-8}{7}$

(iii) $-6 \div \left(\frac{-8}{17}\right) = -6 \times \frac{17}{-8} = \frac{51}{4}$

(iv) $\frac{40}{98} \div (-20) = \frac{40}{98} \times \frac{1}{-20} = \frac{1}{-49} \times \frac{-1}{-1} = \frac{-1}{49}$

Q.3 The Product of two rational numbers is 15. If one of the numbers is -10. find the other.

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Solution: Product of two numbers = 15

one number = −10

∴ other number = $15 \div -10$

$= {}^{3}\cancel{15} \times \frac{-1}{\cancel{10}_{2}} = -\frac{3}{2}$

∴ required number = $-\frac{3}{2}$

Q.4 The product of two rational numbers is $-\frac{8}{9}$. If one of the numbers $-\frac{4}{15}$. Find the other.

Solution: Product of two numbers = $-\frac{8}{9}$

one number = $-\frac{4}{15}$

then, other number = $-\frac{8}{9} \div -\frac{4}{15}$

$= \frac{-\cancel{8}^{2}}{\cancel{9}_{3}} \times \frac{\cancel{15}^{5}}{-\cancel{4}_{1}} = -\frac{10}{3}$

∴ required no. = $-\frac{10}{3}$

Q.5 By what number should we multiply $-\frac{1}{6}$ so that the product may be $-\frac{23}{9}$?

Solution: Product of two numbers = $-\frac{23}{9}$

one number = $-\frac{1}{6}$

∴ required number = $-\frac{23}{9} \div -\frac{1}{6} = \frac{-23}{\cancel{9}_{3}} \times \frac{\cancel{6}^{2}}{-1}$

$= \frac{46}{3}$

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Q.6 By what number should we multiply $\frac{-15}{28}$ so that the product may be $\frac{-5}{7}$?

Solution: Product of two numbers $= \frac{-5}{7}$

one number $= \frac{-15}{28}$

then, the second number $= \frac{-5}{7} \div \frac{-15}{28}$

$= \frac{-5}{7} \times \frac{28}{-15} = \frac{4}{3}$

$\therefore$ required number $= \frac{4}{3}$

Q.7 By what number should we multiply $\frac{-8}{13}$ so that the product may be 24?

Solution: Product of two numbers $= 24$

one number $= \frac{-8}{13}$

$\therefore$ second number $= 24 \div \frac{-8}{13} = 24 \times \frac{13}{-8}$

$= -39$

Q.8 By what number should $-\frac{3}{4}$ be multiplied in order to produce $\frac{2}{3}$?

Solution: Product of two numbers $= \frac{2}{3}$

one number $= -\frac{3}{4}$

$\therefore$ Second no. $= \frac{2}{3} \div \frac{-3}{4} = \frac{2}{3} \times \frac{4}{-3} = \frac{-8}{9}$

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Q9 Find $(x+y) \div (x-y)$ if

(i) $x = \frac{2}{3}, y = \frac{3}{2}$ (ii) $x = \frac{2}{5}, y = \frac{1}{2}$

(iii) $x = \frac{5}{4}, y = \frac{-1}{3}$

Solution: (i) $x = \frac{2}{3}, y = \frac{3}{2}$

$$(x+y) \div (x-y) = \left(\frac{2}{3} + \frac{3}{2}\right) \div \left(\frac{2}{3} - \frac{3}{2}\right)$$

$$= \left(\frac{2\times2 + 3\times3}{6}\right) \div \left(\frac{2\times2 - 3\times3}{6}\right)$$

$$= \left(\frac{4+9}{6}\right) \div \left(\frac{4-9}{6}\right)$$

$$= \frac{13}{6} \div \frac{-5}{6} = \frac{13}{\cancel{6}} \times \frac{\cancel{6}}{-5} = \frac{13}{-5} = \frac{-13}{5}$$

(ii) $x = \frac{2}{5}, y = \frac{1}{2}$

$$(x+y) \div (x-y) = \left(\frac{2}{5} + \frac{1}{2}\right) \div \left(\frac{2}{5} - \frac{1}{2}\right)$$

$$= \left(\frac{2\times2 + 5\times1}{10}\right) \div \left(\frac{2\times2 - 5\times1}{10}\right)$$

$$= \left(\frac{4+5}{10}\right) \div \left(\frac{4-5}{10}\right) = \frac{9}{10} \div \frac{-1}{10}$$

$$= \frac{9}{\cancel{10}} \times \frac{\cancel{10}}{-1} = \frac{9}{-1} = -9$$

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(iii) $x=\frac{5}{4}, y=\frac{-1}{3}$

$$(x+y)\div(x-y)=\left\{\frac{5}{4}+\left(\frac{-1}{3}\right)\right\}\div\left\{\frac{5}{4}-\left(\frac{-1}{3}\right)\right\}$$

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

$$=\left(\frac{5\times3-4\times1}{12}\right)\div\left(\frac{5\times3+4\times1}{12}\right)$$

$$=\frac{15-4}{12}\times\frac{15+4}{12}=\frac{11}{12}\times\frac{19}{12}$$

$$=\frac{11}{12}\times\frac{12}{19}=\frac{11}{19}$$

Q.10 The cost of $7\frac{2}{3}$ metres of rope is Rs $12\frac{3}{4}$. Find its cost per metre

Solution: ∵ The cost of $7\frac{2}{3}$ metres of rope = Rs $12\frac{3}{4}$

∴ Cost of 1 metres of cloth = Rs $12\frac{3}{4}\div7\frac{2}{3}$

$$=\frac{51}{4}\div\frac{23}{3}$$

$$=\frac{51}{4}\times\frac{3}{23}=\frac{153}{92}$$

$$=\text{Rs } 1\frac{61}{92}$$

Q.11 The cost of $2\frac{1}{3}$ metres of cloth is Rs $75\frac{1}{4}$. Find the cost of cloth per metre.

Solution: ∵ The cost of $2\frac{1}{3}$ m. cloth = Rs $75\frac{1}{4}$

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∴ The cost of 1 m cloth = Rs. $\left(15\frac{1}{4} \div 2\frac{1}{3}\right)$

$= \frac{301}{4} \div \frac{7}{3} = \frac{301}{4} \times \frac{3}{7}$,

$= \frac{129}{4} = \text{Rs } 32\frac{1}{4}$

Q.12 By what number should $-\frac{33}{16}$ be divided to get $-\frac{11}{4}$?

Solution: quotient of $-\frac{33}{16}$ and x is $-\frac{11}{4}$

Then $x = -\frac{33}{16} \div -\frac{11}{4} = \frac{-33}{16} \times \frac{4}{-11}$

$= \frac{3}{4}$

Q13 Divide the sum of $-\frac{13}{5}$ and $\frac{12}{7}$ by the product of $-\frac{31}{7}$ and $-\frac{1}{2}$.

Solution: Here, sum of $-\frac{13}{5}$ and $\frac{12}{7}$ is

$-\frac{13}{5} + \frac{12}{7} = \frac{-13\times7 + 12\times5}{35} = \frac{-91+60}{35}$

$= \frac{-31}{35}$

Product $= -\frac{31}{7} \times -\frac{1}{2} = \frac{31}{14}$

Now $-\frac{31}{35} \div \frac{31}{14} = -\frac{31}{35} \times \frac{14}{31} = -\frac{2}{5}$

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Q.14 Divide the sum of $\frac{65}{12}$ and $\frac{8}{3}$ by their difference.

Solution: Sum $= \frac{65}{12} + \frac{8}{3} = \frac{65+8\times4}{12} = \frac{65+32}{12}$

$= \frac{97}{12}$

Difference $= \frac{65}{12} - \frac{8}{3} = \frac{65-8\times4}{12} = \frac{65-32}{12} = \frac{33}{12}$

Now $\frac{97}{12} \div \frac{33}{12}$

$= \frac{97}{\cancel{12}} \times \frac{\cancel{12}}{33} = \frac{97}{33}$

Q.15 If 24 trousers of equal size can be prepared in 54 m of cloth, what length of cloth is required for each trouser?

Solution: Length of cloth required for 24 trousers = 54 m.

∴ Length of cloth required for 1 trouser $= 54 \div 24$

$= \frac{54}{24} \frac{9}{4}$.

$= \frac{9}{4} = 2\frac{1}{4}$ metres.

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Exercise 5.5

Q.1 Find six rational numbers between $-\frac{4}{8}$ and $\frac{3}{8}$

Solution:

We know that

$$-4 < -3 < -2 < -1 < 0 < 1 < 2 < 3$$

Here, 6 rational numbers between $-\frac{4}{8}$ and $\frac{3}{8}$ are as follows,

$$-\frac{3}{8}, -\frac{2}{8}, -\frac{1}{8}, \frac{0}{8}, \frac{1}{8}, \frac{2}{8}$$

Q.2 Find 10 rational numbers between $\frac{7}{13}$ and $-\frac{4}{13}$.

Solution: As we know that

$$7 > 6 > 5 > 4 > 3 > 2 > 1 > 0 > -1 > -2 > -3 > -4$$

Here 10, rational numbers are as follows.

$$\frac{6}{13}, \frac{5}{13}, \frac{4}{13}, \frac{3}{13}, \frac{2}{13}, \frac{1}{13}, \frac{0}{13}, \frac{-1}{13}, \frac{-2}{13}, \frac{-3}{13}$$

Q.3 State true or false

(i) Between any two distinct integers there is always an integer.

(ii) Between any two distinct rational numbers there is always a rational number.

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(iii) Between any two distinct rational numbers there are infinitely many rational numbers.

Solution: (i) False

(ii) True

(iii) True

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