EXERCISE 1.7

Divide:
(i) 1 by 1/2
Solution:
1/1/2 = 1 × 2/1 = 2

(ii) 5 by -5/7
Solution:
5/-5/7 = 5 × 7/-5 = -7

(iii) -3/4 by 9/-16
Solution:
(-3/4) / (9/-16)
(-3/4) × -16/9 = 4/3

(iv) -7/8 by -21/16
Solution:
(-7/8) / (-21/16)
(-7/8) × 16/-21 = 2/3

(v) 7/-4 by 63/64
Solution:
(7/-4) / (63/64)
(7/-4) × 64/63 = -16/9

(vi) 0 by -7/5
Solution:
0 / (7/5) = 0

(vii) -3/4 by -6
Solution:
(-3/4) / -6
(-3/4) × 1/-6 = 1/8

(viii) 2/3 by -7/12
Solution:
(2/3) / (-7/12)
(2/3) × 12/-7 = -8/7

(ix) -4 by -3/5
Solution:
-4 / (-3/5)
-4 × 5/-3 = 20/3

(x) -3/13 by -4/65
Solution:
(-3/13) / (-4/65)
(-3/13) × (65/-4) = 15/4

2. Find the value and express as a rational number in standard form:
(i) 2/5 ÷ 26/15
Solution:
(2/5) / (26/15)
(2/5) × (15/26)
(2/1) × (3/26) = (2×3)/ (1×26) = 6/26 = 3/13

(ii) 10/3 ÷ -35/12
Solution:
(10/3) / (-35/12)
(10/3) × (12/-35)
(10/1) × (4/-35) = (10×4)/ (1×-35) = -40/35 = -8/7

(iii) -6 ÷ -8/17
Solution:
-6 / (-8/17)
-6 × (17/-8)
-3 × (17/-4) = (-3×17)/ (1×-4) = 51/4

(iv) -40/99 ÷ -20
Solution:
(-40/99) / -20
(-40/99) × (1/-20)
(-2/99) × (1/-1) = (-2×1)/ (99×-1) = 2/99

(v) -22/27 ÷ -110/18
Solution:
(-22/27) / (-110/18)
(-22/27) × (18/-110)

(-1/9) × (6/-5)
(-1/3) × (2/-5) = (-1×2) / (3×-5) = 2/15

(vi) -36/125 ÷ -3/75
Solution:
(-36/125) / (-3/75)
(-36/125) × (75/-3)
(-12/25) × (15/-1)
(-12/5) × (3/-1) = (-12×3) / (5×-1) = 36/5

3. The product of two rational numbers is 15. If one of the numbers is -10, find the other.
Solution:
We know that the product of two rational numbers = 15
One of the number = -10
∴ other number can be obtained by dividing the product by the given number.
Other number = 15/-10
= -3/2

4. The product of two rational numbers is -8/9. If one of the numbers is -4/15, find the other.
Solution:
We know that the product of two rational numbers = -8/9
One of the number = -4/15
∴ other number is obtained by dividing the product by the given number.
Other number = (-8/9)/(-4/15)
= (-8/9) × (15/-4)
= (-2/3) × (5/-1)
= (-2×5) /(3×-1)
= -10/-3
= 10/3

5. By what number should we multiply -1/6 so that the product may be -23/9?
Solution:
Let us consider a number = x
So, x × -1/6 = -23/9
x = (-23/9)/(-1/6)
x = (-23/9) × (6/-1)
= (-23/3) × (2×-1)

= (-23×-2)/(3×1)
= 46/3

6. By what number should we multiply -15/28 so that the product may be -5/7?
Solution:
Let us consider a number = x
So, x × -15/28 = -5/7
x = (-5/7)/(-15/28)
x = (-5/7) × (28/-15)
= (-1/1) × (4×-3)
= 4/3

7. By what number should we multiply -8/13 so that the product may be 24?
Solution:
Let us consider a number = x
So, x × -8/13 = 24
x = (24)/(-8/13)
x = (24) × (13/-8)
= (3) × (13×-1)
= -39

8. By what number should -3/4 be multiplied in order to produce 2/3?
Solution:
Let us consider a number = x
So, x × -3/4 = 2/3
x = (2/3)/(-3/4)
x = (2/3) × (4/-3)
= -8/9

9. Find (x+y) ÷ (x-y), if
(i) x= 2/3, y= 3/2
Solution:
(x+y) ÷ (x-y)
(2/3 + 3/2) / (2/3 – 3/2)
((2×2 + 3×3)/6) / ((2×2 - 3×3)/6)
((4+9)/6) / ((4-9)/6)
(13/6) / (-5/6)
(13/6) × (6/-5)
-13/5

(ii) x= 2/5, y= 1/2
Solution:
(x+y) ÷ (x-y)
(2/5 + 1/2) / (2/5 – 1/2)
((2×2 + 1×5)/10) / ((2×2 - 1×5)/10)
((4+5)/10) / ((4-5)/10)
(9/10) / (-1/10)
(9/10) × (10/-1)
-9

(iii) x= 5/4, y= -1/3
Solution:
(x+y) ÷ (x-y)
(5/4 - 1/3) / (5/4 + 1/3)
((5×3 - 1×4)/12) / ((5×3 + 1×4)/12)
((15-4)/12) / ((15+4)/12)
(11/12) / (19/12)
(11/12) × (12/19)
11/19

(iv) x= 2/7, y= 4/3
Solution:
(x+y) ÷ (x-y)
(2/7 + 4/3) / (2/7 - 4/3)
((2×3 + 4×7)/21) / ((2×3 - 4×7)/21)
((6+28)/21) / ((6-28)/21)
(34/21) / (-22/21)
(34/21) × (21/-22)
-34/22
-17/11

(v) x= 1/4, y= 3/2
Solution:
(x+y) ÷ (x-y)
(1/4 + 3/2) / (1/4 - 3/2)
((1×1 + 3×2)/4) / ((1×1 - 3×2)/4)
((1+6)/4) / ((1-6)/4)
(7/4) / (-5/4)
(7/4) × (4/-5) = -7/5

10. The cost of 7 2/3 meters of rope is Rs 12 ¾. Find the cost per meter. Solution:

We know that 23/3 meters of rope = Rs 51/4
Let us consider a number = x
So, x × 23/3 = 51/4
x = (51/4)/(23/3)
x = (51/4) × (3/23)
= (51×3) / (4×23)
= 153/92
= 1 61/92

∴ cost per meter is Rs 1 61/92

11. The cost of 2 1/3 meters of cloth is Rs 75 ¼. Find the cost of cloth per meter. Solution:

We know that 7/3 meters of cloth = Rs 301/4
Let us consider a number = x
So, x × 7/3 = 301/4
x = (301/4)/(7/3)
x = (301/4) × (3/7)
= (301×3) / (4×7)
= (43×3) / (4×1)
= 129/4
= 32.25
∴ cost of cloth per meter is Rs 32.25

12. By what number should -33/16 be divided to get -11/4? Solution:

Let us consider a number = x
So, (-33/16)/x = -11/4
-33/16 = x × -11/4
x = (-33/16) / (-11/4)
= (-33/16) × (4/-11)
= (-33×4)/(16×-11)
= (-3×1)/(4×-1)
= ¾

13. Divide the sum of -13/5 and 12/7 by the product of -31/7 and -1/2. Solution:

sum of -13/5 and 12/7
-13/5 + 12/7
((-13×7) + (12×5))/35
(-91+60)/35
-31/35

Product of -31/7 and -1/2
-31/7 × -1/2
(-31×-1)/(7×2)
31/14
∴ by dividing the sum and the product we get,
(-31/35) / (31/14)
(-31/35) × (14/31)
(-31×14)/(35×31)
-14/35
-2/5

14. Divide the sum of 65/12 and 12/7 by their difference.
Solution:
The sum is 65/12 + 12/7
The difference is 65/12 – 12/7
When we divide, (65/12 + 12/7) / (65/12 – 12/7)
((65×7 + 12×12)/84) / ((65×7 - 12×12)/84)
((455+144)/84) / ((455 - 144)/84)
(599/84) / (311/84)
599/84 × 84/311
599/311

15. If 24 trousers of equal size can be prepared in 54 meters of cloth, what length of cloth is required for each trouser?
Solution:
We know that total number trousers = 24
Total length of the cloth = 54
Length of the cloth required for each trouser = total length of the cloth/number of trousers
= 54/24
= 9/4
∴ 9/4 meters is required for each trouser.