Chapter 9: Coconut Farm

CONTENTS — 18 exercises · 52 questions

9.1	Division Facts — Array Introduction (p. 119)	2 Q
9.2	Let Us Play — Circle-Square Factor/Quotient Puzzle (p. 120)	1 Q
9.3	Let Us Do — Multiplication and Division Facts (p. 120)	1 Q
9.4	Let Us Do — Division Patterns (p. 121)	4 Q
9.5	Let Us Do — Word Problems and Fill in the Blanks (p. 122)	5 Q
9.6	Try It! — Mental Strategies for Division (p. 123)	6 Q
9.7	Let Us Solve — Mental Strategy Practice (p. 124)	1 Q
9.8	Susie's Farm in Kerala — Division with Partial Quotients (p. 124–125)	2 Q
9.9	Let Us Learn to Divide — Division with Remainder (p. 125)	2 Q
9.10	Let Us Solve — Word Problems with Division (p. 126)	5 Q
9.11	Kalpavruksha Coconut Oil — Long Division (p. 126–127)	3 Q
9.12	Division Using Place Value — Worked Examples (p. 128–129)	4 Q
9.13	Let Us Divide — 4-Digit Division (p. 130–131)	1 Q
9.14	Let Us Do — Missing Numbers in Division (p. 131)	1 Q
9.15	Let Us Solve — Word Problems with 4-Digit Division (p. 132–133)	8 Q
9.16	Vegetable Market — Table with Missing Values (p. 134)	1 Q
9.17	Let Us Solve — Division Practice with Place Values (p. 134)	1 Q
9.18	Mathematical Statements (p. 135)	4 Q

Exercise 9.1 — Division Facts — Array Introduction (p. 119)

Q1 Observe the array of coconuts. The given multiplication fact is 5 x 7 = 35. Write two division facts using this multiplication fact. Also answer: 35 / 1 = ___

SOLUTION

From the multiplication fact 5 x 7 = 35, the two division facts are:

35 / 5 = 7 (35 split into 5 groups has 7 in each group)

35 / 7 = 5 (35 split into 7 groups has 5 in each group)

35 / 1 = 35 (any number divided by 1 equals itself)

Answer: 35 / 5 = 7 and 35 / 7 = 5. Also, 35 / 1 = 35.

Q2 Write the appropriate multiplication fact for the array shown below (4 rows of 8 coconuts). Write two division facts that follow from the multiplication fact.

SOLUTION

The array shows 4 rows with 8 coconuts each.
Multiplication fact: 4 x 8 = 32

Two division facts:
32 / 4 = 8 (32 split into 4 groups has 8 in each group)
32 / 8 = 4 (32 split into 8 groups has 4 in each group)

Answer: 4 x 8 = 32. Division facts: 32 / 4 = 8 and 32 / 8 = 4.

Exercise 9.2 — Let Us Play — Circle-Square Factor/Quotient Puzzle (p. 120)

Q1 Identify the numbers that can fill the circles such that the numbers in the squares are the products or the quotients of the numbers in the circles. The first example is given: circles 36 and 2, square 72 (36 x 2 = 72). Fill in the remaining circles for squares 60, 48, 36, 24, 40 (multiplication row) and for 54, 42, 56 with given circle numbers 54, 42, 56 (division row).

SOLUTION

Multiplication row (circle x circle = square):
36 x 2 = 72 [given]
60: e.g. 6 x 10 = 60 or 5 x 12 = 60
48: e.g. 6 x 8 = 48 or 8 x 6 = 48
36: e.g. 4 x 9 = 36 or 6 x 6 = 36
24: e.g. 3 x 8 = 24 or 4 x 6 = 24
40: e.g. 5 x 8 = 40 or 4 x 10 = 40

Division row (square / circle = circle):
54: e.g. 54 / 6 = 9, so circles are 6 and 9
42: e.g. 42 / 7 = 6, so circles are 7 and 6
56: e.g. 56 / 8 = 7, so circles are 8 and 7

For the right side where circle = 54, 42, 56 (the square is the given circle):
54 / ? = ?: e.g. 54 / 9 = 6 or 54 / 6 = 9
42 / ? = ?: e.g. 42 / 6 = 7 or 42 / 7 = 6
56 / ? = ?: e.g. 56 / 7 = 8 or 56 / 8 = 7

Answer: Many answers are possible. Example: 60 = 6 x 10; 48 = 6 x 8; 36 = 4 x 9; 24 = 3 x 8; 40 = 5 x 8. For division: 54 / 9 = 6; 42 / 7 = 6; 56 / 8 = 7.

Exercise 9.3 — Let Us Do — Multiplication and Division Facts (p. 120)

Q1 Solve the following multiplication problems. Write two division statements in each case.

(a) 30 x 30

(b) 15 x 60

(c) 400 x 8

(d) 200 x 16

SOLUTION

(a) 30 x 30 = 900
900 / 30 = 30
900 / 30 = 30 (both division facts are the same here since both factors are equal)

(b) 15 x 60 = 900
900 / 15 = 60
900 / 60 = 15

(c) 400 x 8 = 3,200
3,200 / 400 = 8
3,200 / 8 = 400

(d) 200 x 16 = 3,200
3,200 / 200 = 16
3,200 / 16 = 200

Answer: (a) 900; 900/30=30 (b) 900; 900/15=60, 900/60=15 (c) 3,200; 3,200/400=8, 3,200/8=400 (d) 3,200; 3,200/200=16, 3,200/16=200

Exercise 9.4 — Let Us Do — Division Patterns (p. 121)

Q1 Solve the following division problems. Notice the patterns and discuss in class.

150 / 3 = ___
80 / 4 = ___
500 / 5 = ___
100 / 10 = ___
300 / 100 = ___
500 / 50 = ___
200 / 20 = ___
440 / 44 = ___
630 / 63 = ___

SOLUTION

150 / 3 = 50 (How many 3s in 150? Since 50 x 3 = 150)
80 / 4 = 20
500 / 5 = 100
100 / 10 = 10
300 / 100 = 3
500 / 50 = 10
200 / 20 = 10
440 / 44 = 10
630 / 63 = 10

Pattern: When you divide a number by a factor of itself, the quotient tells you how many groups fit. When dividend and divisor end in the same trailing zeros, they cancel out.

Answer: 50, 20, 100, 10, 3, 10, 10, 10, 10

Q2 Patterns in Division and Place Value. Solve:

1,000 / 10 = ___
1,000 / 100 = ___
1,600 / 4 = ___
2,000 / 2 = ___
2,000 / 20 = ___
3,700 / 37 = ___
3,300 / 3 = ___
3,300 / 300 = ___
4,000 / 40 = ___

SOLUTION

1,000 / 10 = 100
1,000 / 100 = 10
1,600 / 4 = 400
2,000 / 2 = 1,000

2,000 / 20 = 100
3,700 / 37 = 100
3,300 / 3 = 1,100
3,300 / 300 = 11
4,000 / 40 = 100

Answer: 100, 10, 400, 1,000, 100, 100, 1,100, 11, 100

Q3 Fill the place value chart for:
40 / 10 =
400 / 10 =
4,000 / 10 =
What is happening to the quotients in each case?

SOLUTION

40 / 10 = 4 (H=0, T=0, O=4)
400 / 10 = 40 (H=0, T=4, O=0)
4,000 / 10 = 400 (H=4, T=0, O=0)

Pattern: Each time, dividing by 10 shifts the digits one place to the right (removes a zero). The quotient becomes 10 times smaller each step.

Answer: 40/10=4; 400/10=40; 4,000/10=400. Pattern: dividing by 10 removes one zero from the dividend.

Q4 Fill the second place value chart:
110 / 11 =
700 / 70 =
860 / 86 =
1,400 / 100 =
7,500 / 750 =
220 / 20 =
8,800 / 88 =
2,200 / 20 =
2,400 / 24 =
440 / 22 =
What patterns do you notice?

SOLUTION

110 / 11 = 10 (H=0, T=1, O=0)
700 / 70 = 10 (H=0, T=1, O=0)
860 / 86 = 10 (H=0, T=1, O=0)
1,400 / 100 = 14 (H=0, T=1, O=4)
7,500 / 750 = 10 (H=0, T=1, O=0)

220 / 20 = 11 (H=0, T=1, O=1)
8,800 / 88 = 100 (H=1, T=0, O=0)
2,200 / 20 = 110 (H=1, T=1, O=0)
2,400 / 24 = 100 (H=1, T=0, O=0)
440 / 22 = 20 (H=0, T=2, O=0)

Pattern: When the dividend is a multiple of the divisor, the quotient is always a whole number. When both dividend and divisor share trailing zeros, those zeros cancel.

Answer: 10, 10, 10, 14, 10, 11, 100, 110, 100, 20. Pattern: common trailing zeros in dividend and divisor cancel out in the quotient.

Exercise 9.5 — Let Us Do — Word Problems and Fill in the Blanks (p. 122)

Q1 Sabina cycles 160 km in 20 days and the same distance each day. How many kilometres does she cycle each day?

SOLUTION

Distance per day = 160 / 20 = 8 km.

Answer: 8 km each day.

Q2 How many notes of Rs 100 does Seema need to carry if she wants to buy coconuts worth Rs 4,200?

SOLUTION

Number of Rs 100 notes = 4,200 / 100 = 42 notes.

Answer: 42 notes of Rs 100.

Q3 The owner of an electric store has decided to distribute Rs 5,500 equally amongst 5 of his employees as a Diwali gift. What amount will each employee get? What will happen if he distributes the same amount of money among 10 employees? Will each employee get more or less? How much money would he have to distribute if everyone must get the same amount as earlier?

SOLUTION

Amount per employee (5 employees) = 5,500 / 5 = Rs 1,100.

If the same Rs 5,500 is distributed among 10 employees:
Each employee gets = 5,500 / 10 = Rs 550.
Each employee gets LESS (Rs 550 instead of Rs 1,100).

If all 10 employees must get the same Rs 1,100 as before:
Total money needed = 10 x 1,100 = Rs 11,000.
He would have to distribute Rs 11,000 in total.

Answer: Each of 5 employees gets Rs 1,100. With 10 employees sharing Rs 5,500, each gets Rs 550 (less). To give all 10 employees Rs 1,100, he needs Rs 11,000.

Q4 Place the numbers 1 to 8 in the following boxes so that all the four operations — division, multiplication, addition and subtraction — are correct. No number must be repeated. The layout is: [A] / [B] = [C] (top row), [A] - [D] (left column), [B] x [E] (right column), [D] + [E] = [F] (bottom row).

SOLUTION

We need six different numbers from 1–8 such that:
A / B = C (exact division)
D + E = F
A - D and B x E are also whole-number results.

One solution: A=8, B=4, C=2, D=1, E=5, F=6
Check: 8 / 4 = 2 (division) ✓
8 - 1 = 7 (subtraction) ✓
4 x 5 = 20 (multiplication) ✓
1 + 5 = 6 (addition) ✓
All numbers 8, 4, 2, 1, 5, 6 are different and from 1–8. ✓

Another solution: A=6, B=2, C=3, D=1, E=4, F=5
Check: 6 / 2 = 3 ✓, 6 - 1 = 5 ✓, 2 x 4 = 8 ✓, 1 + 4 = 5 ✓
Numbers used: 6, 2, 3, 1, 4, 5 — all different. ✓

Yes, there is more than one answer!

Answer: Example 1: 8/4=2, 8-1=7, 4x5=20, 1+5=6. Example 2: 6/2=3, 6-1=5, 2x4=8, 1+4=5. Multiple solutions exist.

Q5 Fill in the blanks:
(a) ___ / 18 = 100
(b) ___ / 10 = 610
(c) ___ / 100 = 72
(d) ___ / 100 = 10
(e) 870 / ___ = 87
(f) ___ / 100 = 70
(g) 200 / ___ = 2
(h) 130 / ___ = 13

SOLUTION

(a) ___ / 18 = 100 => ___ = 100 x 18 = 1,800
(b) ___ / 10 = 610 => ___ = 610 x 10 = 6,100
(c) ___ / 100 = 72 => ___ = 72 x 100 = 7,200
(d) ___ / 100 = 10 => ___ = 10 x 100 = 1,000
(e) 870 / ___ = 87 => ___ = 870 / 87 = 10
(f) ___ / 100 = 70 => ___ = 70 x 100 = 7,000
(g) 200 / ___ = 2 => ___ = 200 / 2 = 100
(h) 130 / ___ = 13 => ___ = 130 / 13 = 10

Answer: (a) 1,800 (b) 6,100 (c) 7,200 (d) 1,000 (e) 10 (f) 7,000 (g) 100 (h) 10

Exercise 9.6 — Try It! — Mental Strategies for Division (p. 123)

Q1 64 / 4 using the split method.

SOLUTION

Split 64 into parts that are easy to divide by 4:
64 = 40 + 24
40 / 4 = 10
24 / 4 = 6
64 / 4 = 10 + 6 = 16

Answer: 16

Q2 265 / 5 using the split method.

SOLUTION

Split 265 into parts easy to divide by 5:
265 = 250 + 15
250 / 5 = 50
15 / 5 = 3
265 / 5 = 50 + 3 = 53

Answer: 53

Q3 1,560 / 8 using the split method.

SOLUTION

Split 1,560 into parts easy to divide by 8:
1,560 = 1,600 - 40
1,600 / 8 = 200
40 / 8 = 5
1,560 / 8 = 200 - 5 = 195

Answer: 195

Q4 4,824 / 24 using the split method.

SOLUTION

Split 4,824 into parts easy to divide by 24:
4,824 = 4,800 + 24
4,800 / 24 = 200
24 / 24 = 1
4,824 / 24 = 200 + 1 = 201

Answer: 201

Q5 168 / 8 using repeated halving.

SOLUTION

To divide by 8, halve three times.
Half of 168 = 84
Half of 84 = 42
Half of 42 = 21
168 / 8 = 21

Answer: 21

Q6 144 / 4 using repeated halving.

SOLUTION

To divide by 4, halve twice.
Half of 144 = 72
Half of 72 = 36
144 / 4 = 36

Answer: 36

Exercise 9.7 — Let Us Solve — Mental Strategy Practice (p. 124)

Q1 Solve using mental strategies:
(a) 256 / 4
(b) 545 / 5
(c) 147 / 7
(d) 1,212 / 6
(e) 648 / 12
(f) 9,648 / 48
(g) 775 / 25
(h) 796 / 4

SOLUTION

(a) 256 / 4: Halve twice. 256 -> 128 -> 64. Answer: 64
(b) 545 / 5: Split. 545 = 500 + 45. 500/5=100, 45/5=9. Answer: 109
(c) 147 / 7: Split. 147 = 140 + 7. 140/7=20, 7/7=1. Answer: 21
(d) 1,212 / 6: Split. 1,212 = 1,200 + 12. 1,200/6=200, 12/6=2. Answer: 202
(e) 648 / 12: Split. 648 = 600 + 48. 600/12=50, 48/12=4. Answer: 54
(f) 9,648 / 48: Split. 9,648 = 9,600 + 48. 9,600/48=200, 48/48=1. Answer: 201
(g) 775 / 25: Split. 775 = 750 + 25. 750/25=30, 25/25=1. Answer: 31
(h) 796 / 4: Split. 796 = 800 - 4. 800/4=200, 4/4=1. 796/4 = 200 - 1 = 199. Answer: 199

Answer: (a) 64 (b) 109 (c) 21 (d) 202 (e) 54 (f) 201 (g) 31 (h) 199

Exercise 9.8 — Susie's Farm in Kerala — Division with Partial Quotients (p. 124–125)

Q1 Susie and Sunitha harvested 1,117 coconuts in April. They sold 582 coconuts equally to 6 regular customers. How many coconuts did each customer get? Each bag can hold 25 coconuts. How many bags would be needed to pack 97 coconuts?

SOLUTION

Step 1: 582 / 6
Using Sunitha's method:

```
6) 582 (90 + 7
 - 540
 ------
   42
  - 42
 ------
    0
```

Each customer gets 97 coconuts.

Step 2: Bags needed for 97 coconuts (25 per bag).
3 bags hold 75 coconuts. Remaining = 97 - 75 = 22 coconuts.
One more bag is needed for the remaining 22.
Total bags = 3 + 1 = 4 bags per customer.

Answer: Each customer gets 97 coconuts. 4 bags are needed to pack 97 coconuts.

Q2 They pack the remaining coconuts for drying and extracting oil. Each bag holds 25 coconuts. How many bags will they need to pack the remaining coconuts?

SOLUTION

Coconuts remaining after selling 582 = 1,117 - 582 = 535.

Bags needed = 535 / 25

```
25) 535 (20 + 1
 - 500
 ------
   35
  - 25
 ------
   10  (remainder)
```

21 full bags hold 525 coconuts. 10 coconuts remain.
One more bag is needed for the remaining 10.
Total bags = 21 + 1 = 22 bags.

Answer: 22 bags are needed (21 full bags of 25 and 1 bag for the 10 remaining coconuts).

Exercise 9.9 — Let Us Learn to Divide — Division with Remainder (p. 125)

Q1 726 / 4. Find the quotient and remainder. Is 726 = 4 x 181? Check: 726 = 4 x 181 + ___.

SOLUTION

4) 726 (100 + 80 + 1 = 181
- 400

326
- 320

6
- 4

2

Quotient = 181, Remainder = 2.

Check: Is 726 = 4 x 181? 4 x 181 = 724. No, 4 x 181 = 724 (not 726).
So 726 = 4 x 181 + 2. N = D x Q + R: 726 = 4 x 181 + 2. ✓

Answer: 726 / 4 = 181 remainder 2. 726 = 4 x 181 + 2.

Q2 902 / 16. Find the quotient and remainder. Is 902 = 16 x 56? Check: 902 = 16 x 56 + ___.

SOLUTION

16) 902 (50 + 6 = 56
- 800

102
- 96

6

Quotient = 56, Remainder = 6.

Check: Is 902 = 16 x 56? 16 x 56 = 896 (not 902). No.
So 902 = 16 x 56 + 6. N = D x Q + R: 902 = 16 x 56 + 6. ✓

Answer: 902 / 16 = 56 remainder 6. 902 = 16 x 56 + 6.

Exercise 9.10 — Let Us Solve — Word Problems with Division (p. 126)

Q1 Rani is planning to host a party. She estimates that 250 guests will attend. She plans to serve one samosa to each guest. Samosas are available in packs of 6 or 8. Which pack should Rani buy? Explain your answer.

SOLUTION

Total samosas needed = 250 (one per guest).

Packs of 6: 250 / 6 = 41 remainder 4.
She needs 41 full packs (246 samosas) + 1 more pack for the remaining 4 guests = 42 packs of 6.
Total samosas = 42 x 6 = 252 (2 extra).

Packs of 8: 250 / 8 = 31 remainder 2.
She needs 31 full packs (248 samosas) + 1 more pack = 32 packs of 8.
Total samosas = 32 x 8 = 256 (6 extra).

Packs of 6 give fewer leftovers (only 2 extra) and are likely cheaper in total.
Rani should buy packs of 6: 42 packs gives 252 samosas, wasting only 2.

Answer: Packs of 6 are better. 42 packs of 6 give 252 samosas (only 2 extra). 32 packs of 8 give 256 samosas (6 extra).

Q2 342 students from a school are going on a trip to the Science Park. Each bus can carry a maximum of 41 students. How many buses does the school need to arrange?

SOLUTION

342 / 41 = 8 remainder 14.
8 buses carry 8 x 41 = 328 students.
Remaining students = 342 - 328 = 14.
1 more bus is needed for the remaining 14 students.
Total buses = 8 + 1 = 9 buses.

Answer: 9 buses (8 full buses of 41 and 1 bus for the remaining 14 students).

Q3 Sofia has only Rs 50 and Rs 20 notes. She needs to pay Rs 520 using these notes. How many Rs 50 and Rs 20 notes does she need to make Rs 520? Find out the different possible combinations.

SOLUTION

We need: 50 x a + 20 x b = 520, where a and b are whole numbers.

Try different values of a (number of Rs 50 notes):
a=0: 20 x b = 520, b = 26 => 0 notes of 50 + 26 notes of 20
a=2: 100 + 20b = 520, 20b = 420, b = 21 => 2 notes of 50 + 21 notes of 20
a=4: 200 + 20b = 520, 20b = 320, b = 16 => 4 notes of 50 + 16 notes of 20

a=6: 300 + 20b = 520, 20b = 220, b = 11 => 6 notes of 50 + 11 notes of 20
a=8: 400 + 20b = 520, 20b = 120, b = 6 => 8 notes of 50 + 6 notes of 20
a=10: 500 + 20b = 520, 20b = 20, b = 1 => 10 notes of 50 + 1 note of 20

There are 6 possible combinations.

Answer: 6 combinations: (0+26), (2+21), (4+16), (6+11), (8+6), (10+1) for (Rs 50 notes + Rs 20 notes).

Q4 Three friends decide to split the money spent on their picnic equally. They buy snacks and sweets for Rs 157, juice and fruits for Rs 124 and pulav and paratha for Rs 136. How much should each person pay to share the cost equally?

SOLUTION

Total cost = 157 + 124 + 136 = Rs 417.
Each person's share = 417 / 3 = 139.
Check: 3 x 139 = 417 ✓

Answer: Each person pays Rs 139.

Q5 Identify the remainder, if any. Check if N = D x Q + R.
(a) 887 / 3
(b) 283 / 8
(c) 745 / 5
(d) 767 / 26
(e) 530 / 41
(f) 888 / 67

SOLUTION

(a) 887 / 3 = 295 remainder 2. Check: 3 x 295 + 2 = 885 + 2 = 887 ✓
(b) 283 / 8 = 35 remainder 3. Check: 8 x 35 + 3 = 280 + 3 = 283 ✓
(c) 745 / 5 = 149 remainder 0. Check: 5 x 149 = 745 ✓ (no remainder)
(d) 767 / 26 = 29 remainder 13. Check: 26 x 29 + 13 = 754 + 13 = 767 ✓
(e) 530 / 41 = 12 remainder 38. Check: 41 x 12 + 38 = 492 + 38 = 530 ✓
(f) 888 / 67 = 13 remainder 17. Check: 67 x 13 + 17 = 871 + 17 = 888 ✓

Answer: (a) Q=295, R=2 (b) Q=35, R=3 (c) Q=149, R=0 (d) Q=29, R=13 (e) Q=12, R=38 (f) Q=13, R=17

Exercise 9.11 — Kalpavruksha Coconut Oil — Long Division (p. 126–127)

Q1 Susie and Sunitha used 4,376 coconuts for extracting coconut oil. They can extract 1 litre of oil from 8 coconuts. What quantity of oil were they able to extract? How much will they earn if they sell the oil at Rs 175 for 1 litre?

SOLUTION

Litres of oil = 4,376 / 8

8) 4,376 (500 + 40 + 7 = 547
- 4,000

376
- 320

56
- 56

0

They extracted 547 litres of oil.

Earnings = 547 x 175
= 547 x 100 + 547 x 75
= 54,700 + 547 x 75
547 x 75 = 547 x 70 + 547 x 5 = 38,290 + 2,735 = 41,025
Total = 54,700 + 41,025 = Rs 95,725.

Answer: 547 litres of oil. Earnings from selling at Rs 175/litre = Rs 95,725.

Q2 Susie and Sunitha's farm sells coconut husk at Rs 23 per kilogram. They earned Rs 9,913 from the sale of husk in May. What quantity of husk did they sell in May?

SOLUTION

Quantity of husk = 9,913 / 23

23) 9,913 (400 + 30 + 1 = 431
- 9,200

713
- 690

23
- 23

0

They sold 431 kg of coconut husk in May.

Answer: 431 kg of coconut husk.

Q3 In the hot summer months, tender coconuts are sold for Rs 35. Ibrahim earns Rs 8,890 in a week. How many tender coconuts did he sell? Ibrahim had bought the tender coconuts for Rs 20 each. How much extra money did he earn by selling the coconuts at Rs 35?

SOLUTION

Number of coconuts = 8,890 / 35

35) 8,890 (200 + 50 + 4 = 254

- 7,000

1,890

- 1,750

140

- 140

0

Ibrahim sold 254 tender coconuts.

Cost of 254 coconuts at Rs 20 each = 254 x 20 = Rs 5,080.

He earned Rs 8,890 from the sale.

Extra amount earned = 8,890 - 5,080 = Rs 3,810.

Answer: Ibrahim sold 254 tender coconuts. He earned an extra Rs 3,810 (sold at Rs 35, bought at Rs 20).

Exercise 9.12 — Division Using Place Value — Worked Examples (p. 128–129)

Q1 62 / 5 using place value method. Divide 62 into 5 equal parts.

SOLUTION

62 = 6 Tens + 2 Ones.
6 Tens / 5: each part gets 1 Ten. Remainder = 1 Ten = 10 Ones.
Total Ones = 10 + 2 = 12 Ones.
12 Ones / 5 = 2 Ones each, remainder 2.

```
5) 62 (12
  - 5 (Tens)
  ----
   12 (Ones)
  - 10
  ----
    2  (remainder)
```

Quotient = 12, Remainder = 2.
Each child gets 12 candies. 2 candies are left over.

Answer: 62 / 5 = 12 remainder 2. Each child gets 12 candies.

Q2 75 / 8 using place value method. Divide 75 into 8 equal parts.

SOLUTION

75 cannot be divided into 8 equal Tens (only 7 Tens, not enough for 8 groups).
Regroup all 75 into 75 Ones.
75 Ones / 8 = 9 Ones each, remainder 3.

```
8) 75 (09
  - 72 (Ones)
  -----
    3  (remainder)
```

Quotient = 9, Remainder = 3.

Answer: 75 / 8 = 9 remainder 3.

Q3 324 / 3 using place value method. Divide 324 into 3 equal parts.

SOLUTION

324 = 3 Hundreds + 2 Tens + 4 Ones.
3 Hundreds / 3 = 1 Hundred each.
2 Tens / 3: not possible without regrouping, so 0 Tens each.
Regroup 2 Tens into 20 Ones. Total Ones = 20 + 4 = 24.
24 Ones / 3 = 8 Ones each.

3) 324 (108
- 3 (Hundreds)
---
2 (Tens)
- 0
---
24 (Ones)
- 24

0

Quotient = 108, Remainder = 0.
The 0 in the Tens place of the quotient is written because 2 Tens cannot be divided by 3 without regrouping.

Answer: 324 / 3 = 108.

Q4 136 / 6 using place value method. Divide 136 into 6 equal parts.

SOLUTION

136 = 1 Hundred + 3 Tens + 6 Ones.
1 Hundred / 6: not possible without regrouping. Regroup into 10 Tens.
Total Tens = 10 + 3 = 13 Tens.
13 Tens / 6 = 2 Tens each, remainder 1 Ten = 10 Ones.
Total Ones = 10 + 6 = 16 Ones.
16 Ones / 6 = 2 Ones each, remainder 4.

6) 136 (022 = 22
- 12 (Tens)
---
16 (Ones)
- 12
---
4 (remainder)

Quotient = 22, Remainder = 4.

Answer: 136 / 6 = 22 remainder 4.

Exercise 9.13 — Let Us Divide — 4-Digit Division (p. 130–131)

Q1 (a) 7,032 / 6
(b) 3,005 / 5
(c) 2,874 / 14
(d) 9,805 / 32

SOLUTION

(a) 7,032 / 6:

```
6) 7,032 (1,000 + 100 + 70 + 2 = 1,172
  - 6,000
  --------
   1,032
  -   600
  --------
     432
   - 420
  --------
      12
    - 12
  --------
       0
```

7,032 / 6 = 1,172 remainder 0.

(b) 3,005 / 5:

```
5) 3,005 (600 + 1 = 601
  - 3,000
  --------
       5
     - 5
  --------
       0
```

3,005 / 5 = 601 remainder 0.

(c) 2,874 / 14:

```
14) 2,874 (200 + 5 = 205
  - 2,800
  --------
      74
    - 70
  --------
       4
```

2,874 / 14 = 205 remainder 4.
Check: 14 x 205 + 4 = 2,870 + 4 = 2,874 ✓

(d) 9,805 / 32:

```
32) 9,805 (300 + 6 = 306
  - 9,600
  --------
     205
   - 192
  --------
      13
```

9,805 / 32 = 306 remainder 13.

Check: 32 x 306 + 13 = 9,792 + 13 = 9,805 ✓

Answer: (a) 1,172 (b) 601 (c) 205 remainder 4 (d) 306 remainder 13

Exercise 9.14 — Let Us Do — Missing Numbers in Division (p. 131)

Q1 Find the missing numbers such that there is no remainder. Remember, there could be more than one solution. The problems show partial division setups: 4)480, 20)400, a blank divisor dividing into 8₈ to give 21_, 3)_36 giving 3__, a blank)88, _)9₀, _)180, _)6480. Also a mystery number puzzle: 'I am a 3-digit number. If you divide me by 5, you get 42. If you multiply me by 2, you get 420. What number am I?'

SOLUTION

4) 480 (120: 480 / 4 = 120. Missing quotient digits: 1, 2, 0.

20) 400 (20: 400 / 20 = 20. Missing quotient: 20.

For) 8₈ (21_: If quotient starts 21, the divisor x 21x = 8₈.
Example: 4) 848 (212: 4 x 212 = 848. Or 8) 888 (111 — but 888 has no remainder. Another: 4) 848 (212 ✓

3) _36 (3__: 3 x 3__ = _36. Try: 3) 936 (312: 3 x 312 = 936 ✓

) 88 (___: Many options. Example: 4) 88 (22: 4 x 22 = 88 ✓. Or 8) 88 (11: 8 x 11 = 88 ✓

) 9₀ (___: Example: 5) 950 (190: 5 x 190 = 950 ✓

) 180 (___: Example: 4) 180 (45: 4 x 45 = 180 ✓. Or 5) 180 (36 ✓. Or 6) 180 (30 ✓

) 6,480 (___: Example: 8) 6,480 (810: 8 x 810 = 6,480 ✓

Mystery number:
Divide by 5 gives 42 => number = 42 x 5 = 210.
Check: multiply 210 by 2 = 420 ✓
The 3-digit number is 210.

Answer: Sample answers: 4)480=120; 20)400=20; 3)936=312; 4)88=22; Mystery number = 210 (210/5=42 and 210x2=420).

Exercise 9.15 — Let Us Solve — Word Problems with 4-Digit Division (p. 132–133)

Q1 A theatre company can accommodate 45 people during one show.
(a) A total of 475 people bought tickets for a puppet show. How many shows are needed to seat all the people who bought tickets?
(b) There are 2 shows in a day. How many days will be needed to accommodate all the people?

SOLUTION

(a) 475 / 45 = 10 remainder 25.
10 shows seat 450 people. 25 people remain.
1 more show is needed for the remaining 25.
Total shows needed = 10 + 1 = 11 shows.

(b) With 2 shows per day: 11 / 2 = 5 remainder 1.
5 days have 10 shows. 1 show remains.
1 more day is needed for the last show.
Total days = 5 + 1 = 6 days.

Answer: (a) 11 shows (b) 6 days.

Q2 Naina bought 5 kg of ice cream as a birthday treat for her 23 friends. 400 g ice cream was left after everyone had an equal share. How much ice cream did each of her friends eat?

SOLUTION

Total ice cream = 5 kg = 5,000 g.
Ice cream shared = 5,000 - 400 = 4,600 g.
Each friend's share = 4,600 / 23 = 200 g.
Check: 23 x 200 = 4,600 ✓

Answer: Each friend ate 200 g of ice cream.

Q3 Megha packs 15 packets of ragi-oats biscuits for a 4-day group trip. Each packet contains 8 biscuits. There are 6 people in the group. If distributed evenly, how many biscuits can one person have each day?

SOLUTION

Total biscuits = 15 x 8 = 120 biscuits.
Biscuits per person (total) = 120 / 6 = 20 biscuits.
Biscuits per person per day = 20 / 4 = 5 biscuits.

Answer: Each person can have 5 biscuits per day.

Q4 Solve the following and identify the remainder, if any. Check whether N = D x Q + R in each case.
(a) 9,045 / 5
(b) 1,034 / 4
(c) 2,504 / 7
(d) 8,900 / 15
(e) 9,876 / 32
(f) 7,506 / 24

SOLUTION

(a) 9,045 / 5 = 1,809 remainder 0. Check: 5 x 1,809 = 9,045 ✓
(b) 1,034 / 4 = 258 remainder 2. Check: 4 x 258 + 2 = 1,032 + 2 = 1,034 ✓
(c) 2,504 / 7 = 357 remainder 5. Check: 7 x 357 + 5 = 2,499 + 5 = 2,504 ✓
(d) 8,900 / 15 = 593 remainder 5. Check: 15 x 593 + 5 = 8,895 + 5 = 8,900 ✓
(e) 9,876 / 32 = 308 remainder 20. Check: 32 x 308 + 20 = 9,856 + 20 = 9,876 ✓
(f) 7,506 / 24 = 312 remainder 18. Check: 24 x 312 + 18 = 7,488 + 18 = 7,506 ✓

Answer: (a) 1,809, R=0 (b) 258, R=2 (c) 357, R=5 (d) 593, R=5 (e) 308, R=20 (f) 312, R=18

Q5 Find the solutions for part A. Observe the relations between quotient, divisor and dividend and use it to answer parts B and C.
A: (a) 340/34=10 (b) 340/17=? (c) 680/17=? (d) 680/34=? (e) 170/17=? (f) 680/68=?
B: (a) 192/4=48 (b) 192/8=? (c) 384/8=? (d) 384/4=? (e) 384/8=? (f) 86/2=?
C: (a) 352/11=32 (b) 704/22=? (c) 704/11=? (d) 352/22=? (e) 1,408/44=?

SOLUTION

Part A (pattern: doubling dividend or halving divisor doubles quotient):
(a) 340 / 34 = 10 [given]
(b) 340 / 17 = 20 (same dividend, divisor halved => quotient doubles)
(c) 680 / 17 = 40 (dividend doubled from (b) => quotient doubles)
(d) 680 / 34 = 20 (dividend doubled from (a), divisor same => quotient doubles)
(e) 170 / 17 = 10 (half of 340 / same divisor 17 as (b) => half the quotient)
(f) 680 / 68 = 10 (both dividend and divisor doubled from (a) => same quotient)

Part B (pattern: doubling divisor halves quotient):
(a) 192 / 4 = 48 [given]
(b) 192 / 8 = 24 (divisor doubled => quotient halved)
(c) 384 / 8 = 48 (dividend doubled from (b) => quotient doubles back to 48)
(d) 384 / 4 = 96 (dividend doubled from (a) => quotient doubled)
(e) 384 / 8 = 48 (same as (c))
(f) 86 / 2 = 43

Part C (pattern: doubling both dividend and divisor keeps quotient same):
(a) 352 / 11 = 32 [given]
(b) 704 / 22 = 32 (both doubled => same quotient)

(c) 704 / 11 = 64 (dividend doubled, divisor same => quotient doubles)
(d) 352 / 22 = 16 (dividend same, divisor doubled => quotient halved)
(e) 1,408 / 44 = 32 (both quadrupled from (a) => same quotient)

Answer: A: 10,20,40,20,10,10. B: 48,24,48,96,48,43. C: 32,32,64,16,32.

Q6 A company in Mumbai organises cycle rallies from Mumbai to Panjim, Goa every year. They aim to cover 576 km in 12 days.
(a) How much distance should they cycle every day, to cover the distance evenly?
(b) After reaching Ratnagiri, they rest for 1 day. How much distance should they cycle each day to reach Goa in 4 days? Assume that they cover the distance evenly.

SOLUTION

(a) Distance per day = 576 / 12 = 48 km.

(b) From the map, Mumbai to Ratnagiri is 344 km and Ratnagiri to Goa is 232 km.
(Total = 344 + 232 = 576 km.)
After reaching Ratnagiri, remaining distance to Goa = 232 km.
They need to cover 232 km in 4 days.
Distance per day = 232 / 4 = 58 km.

Answer: (a) 48 km per day. (b) 58 km per day.

Q7 Given below are a few problems. You may need some additional information to solve these. Identify the missing information. Write the missing information and find the answer.
(a) A fruit vendor sells 6 baskets of mangoes. Each basket contains 12 mangoes. How much did the vendor earn in total?
(b) A school has 8 classrooms, and each classroom has an equal number of desks. How many desks are there in each classroom?
(c) Rahul buys 5 cricket bats for his team. The total bill is Rs 3,500. How much does one bat cost?
(d) A restaurant serves 125 plates of idlis in a day. The total earnings from selling all the idli plates is Rs 6,250. How many idlis are there in each plate?

SOLUTION

(a) Missing information: price per mango (or price per basket).
Total mangoes = 6 x 12 = 72 mangoes.
If we know the price, say Rs 5 per mango, then earnings = 72 x 5 = Rs 360.
(Answer depends on the missing price.)

(b) Missing information: total number of desks in the school.
If total desks = 240 (for example), then desks per classroom = 240 / 8 = 30.
(Answer depends on the missing total.)

(c) No missing information here — it can be solved directly.
Cost of 1 bat = 3,500 / 5 = Rs 700.

(d) Earnings = Rs 6,250 for 125 plates, so price per plate = 6,250 / 125 = Rs 50.
But the question asks how many idlis are in each plate — that needs the price of one idli.
Missing information: price per idli. If each idli costs Rs 10, then idlis per plate = 50 / 10 = 5.

Answer: (a) Missing: price per mango (e.g. 72 mangoes x Rs 5 = Rs 360). (b) Missing: total desks. (c) Rs 700 per bat. (d) Missing: price per idli (e.g. at Rs 10 each => 5 idlis per plate).

Q8 To make one bookshelf, a carpenter needs: 4 long wooden panels, 8 short wooden panels, 16 small clips, 4 large clips, 32 screws. The carpenter has: 264 long panels, 306 short panels, 2,400 small clips, 120 large clips, and 2,800 screws. How many bookshelves can the carpenter make?

SOLUTION

Find how many bookshelves each material allows:
Long panels: 264 / 4 = 66 bookshelves
Short panels: 306 / 8 = 38 bookshelves (remainder 2, so only 38 complete sets)
Small clips: 2,400 / 16 = 150 bookshelves
Large clips: 120 / 4 = 30 bookshelves
Screws: 2,800 / 32 = 87 bookshelves (remainder 16)

The limiting material is large clips: only 30 full sets.
The carpenter can make 30 bookshelves.

Answer: 30 bookshelves (limited by the 120 large clips: 120 / 4 = 30).

Exercise 9.16 — Vegetable Market — Table with Missing Values (p. 134)

Q1 Help Munshi Lal complete his vegetable record table. Missing values:
1. Radish: Rs 26/kg, 78 kg — Total Amount = ?
2. Potato: Rs 20/kg — Quantity = ?, Total = Rs 2,240
3. Cabbage: Rs 32/kg, 56 kg — Total Amount = ?
4. Green peas: 125 kg, Total = Rs 3,125 — Cost of 1 kg = ?
Total money earned = ?

SOLUTION

1. Radish: Total = 26 x 78 = Rs 2,028.
   Check: 26 x 70 = 1,820; 26 x 8 = 208; 1,820 + 208 = 2,028 ✓
2. Potato: Quantity = 2,240 / 20 = 112 kg.
   Check: 20 x 112 = 2,240 ✓
3. Cabbage: Total = 32 x 56 = Rs 1,792.
   Check: 32 x 50 = 1,600; 32 x 6 = 192; 1,600 + 192 = 1,792 ✓
4. Green peas: Cost per kg = 3,125 / 125 = Rs 25.
   Check: 25 x 125 = 3,125 ✓

Total money earned = 2,028 + 2,240 + 1,792 + 3,125 = Rs 9,185.
Check: 2,028 + 2,240 = 4,268; 1,792 + 3,125 = 4,917; 4,268 + 4,917 = 9,185 ✓

Answer: Radish total = Rs 2,028; Potato qty = 112 kg; Cabbage total = Rs 1,792; Green peas Rs 25/kg. Total earned = Rs 9,185.

Exercise 9.17 — Let Us Solve — Division Practice with Place Values (p. 134)

Q1 Divide the following. Identify the remainder, if any, and check whether N = D x Q + R.

1. 506 / 5
2. 918 / 8
3. 8,126 / 7
4. 9,324 / 4
5. 876 / 6
6. 7,008 / 3
7. 934 / 12
8. 829 / 23
9. 705 / 18
10. 8,704 / 32
11. 6,790 / 45
12. 5,074 / 21

SOLUTION

1. 506 / 5 = 101 R 1. Check: 5 x 101 + 1 = 506 ✓
2. 918 / 8 = 114 R 6. Check: 8 x 114 + 6 = 918 ✓
3. 8,126 / 7 = 1,160 R 6. Check: 7 x 1,160 + 6 = 8,126 ✓
4. 9,324 / 4 = 2,331 R 0. Check: 4 x 2,331 = 9,324 ✓
5. 876 / 6 = 146 R 0. Check: 6 x 146 = 876 ✓
6. 7,008 / 3 = 2,336 R 0. Check: 3 x 2,336 = 7,008 ✓
7. 934 / 12 = 77 R 10. Check: 12 x 77 + 10 = 934 ✓
8. 829 / 23 = 36 R 1. Check: 23 x 36 + 1 = 829 ✓
9. 705 / 18 = 39 R 3. Check: 18 x 39 + 3 = 705 ✓
10. 8,704 / 32 = 272 R 0. Check: 32 x 272 = 8,704 ✓
11. 6,790 / 45 = 150 R 40. Check: 45 x 150 + 40 = 6,790 ✓
12. 5,074 / 21 = 241 R 13. Check: 21 x 241 + 13 = 5,074 ✓

Answer: 1.101 R1 2.114 R6 3.1160 R6 4.2331 5.146 6.2336 7.77 R10 8.36 R1 9.39 R3 10.272 11.150 R40 12.241 R13

Exercise 9.18 — Mathematical Statements (p. 135)

Q1 Find out whether the following statements are True (T) or False (F). A true sentence is one where both sides of the '=' sign have the same value.
(a) 8 x 9 = 70 + 2
(b) 20 - 6 = 7 x 3
(c) 48 / 3 = 4 x 4
(d) 89 - 9 = 90 + 0
(e) 25 + 10 = 45 - 10

SOLUTION

(a) 8 x 9 = 72. 70 + 2 = 72. Both sides = 72. TRUE
(b) 20 - 6 = 14. 7 x 3 = 21. 14 ≠ 21. FALSE
(c) 48 / 3 = 16. 4 x 4 = 16. Both sides = 16. TRUE
(d) 89 - 9 = 80. 90 + 0 = 90. 80 ≠ 90. FALSE
(e) 25 + 10 = 35. 45 - 10 = 35. Both sides = 35. TRUE

Answer: (a) T (b) F (c) T (d) F (e) T

Q2 Complete the following statements such that they are true.
(a) 7 x 6 = ___ + 17
(b) 87 + 6 = ___ x 31
(c) 63 + ___ = 74 - 4
(d) ___ / 9 = 16 / 2

SOLUTION

(a) 7 x 6 = 42. So ___ + 17 = 42. ___ = 42 - 17 = 25.
(b) 87 + 6 = 93. So ___ x 31 = 93. ___ = 93 / 31 = 3.
(c) 74 - 4 = 70. So 63 + ___ = 70. ___ = 70 - 63 = 7.
(d) 16 / 2 = 8. So ___ / 9 = 8. ___ = 8 x 9 = 72.

Answer: (a) 25 (b) 3 (c) 7 (d) 72

Q3 Think about the following statements and find examples as suggested.
(a) 'When two odd numbers are added, the sum is even.' Find 5 examples. Can you find an example to show it is false? (Always true)
(b) 'Multiplying a number by 2 can give an odd number.' Give examples. Can you find any? (Never true)
(c) 'Halving a number always leads to an even number.' Give 3 examples and 3 counter-examples. (Sometimes true)

SOLUTION

(a) Adding two odd numbers always gives an even number.
5 examples: 1+3=4 ✓, 5+7=12 ✓, 9+11=20 ✓, 3+9=12 ✓, 7+13=20 ✓

You CANNOT find a counter-example — this is always true.
Reason: odd + odd = (even+1) + (even+1) = even + 2 = even.

(b) Multiplying any number by 2 always gives an even number — NEVER odd.
2x1=2 (even), 2x3=6 (even), 2x5=10 (even).
You cannot find any example that gives an odd result.

(c) Halving is sometimes true:
Examples where halving gives even: 8/2=4 ✓, 12/2=6 ✓, 20/2=10 ✓
Examples where halving gives odd: 6/2=3 (odd), 10/2=5 (odd), 14/2=7 (odd)

Answer: (a) Always true — e.g. 1+3=4, 5+7=12. No counter-example exists. (b) Never true — 2 x any number is always even. (c) Sometimes true — 8/2=4 (even), but 6/2=3 (odd).

Q4 Tick in the appropriate cell (Always True / Sometimes True / Never True) for the following statements:
(a) Adding 10 to a number gives a multiple of ten.
(b) Changing the order of the numbers in subtraction makes no difference.
(c) In multiplication, doubling one number and halving the other keeps the product the same.
(d) Multiplication by an odd number gives an even number.
(e) Multiplying a number by 5 leads to numbers which have '0' in the Ones place.

SOLUTION

(a) Adding 10 to a number gives a multiple of ten.
10+5=15 (not a multiple of 10). 10+10=20 (is a multiple of 10).
SOMETIMES TRUE.

(b) Changing the order of numbers in subtraction makes no difference.
5-3=2 but 3-5 is negative (different). NEVER TRUE.

(c) Doubling one number and halving the other keeps the product the same.
Example: 4 x 6 = 24. Double 4, halve 6: 8 x 3 = 24. Same! ✓
(Works as long as the halved number is even. If it is odd, halving is not a whole number.)
For whole-number cases, ALWAYS TRUE.

(d) Multiplication by an odd number gives an even number.
3 x 2 = 6 (even). 3 x 3 = 9 (odd). SOMETIMES TRUE.

(e) Multiplying a number by 5 leads to numbers which have '0' in the Ones place.
5x2=10 (ends in 0). 5x3=15 (ends in 5). SOMETIMES TRUE.

Answer: (a) Sometimes True (b) Never True (c) Always True (for whole numbers) (d) Sometimes True (e) Sometimes True