Exercise 1.1

1. (a) 65,00,322   (b) 900,01,030
    (c) 2,000,365,728   (d) 425,716,402

2. (a) 6,87,54,329 $\rightarrow$ Six crore eighty-seven lakh fifty-four thousand three hundred twenty-nine
    (b) 7,39,87,021 $\rightarrow$ Seven crore thirty-nine lakh eighty seven thousand twenty-one
    (c) 9,37,54,081 $\rightarrow$ Nine crore thirty-seven lakh fifty-four thousand eighty-one
    (d) 2,60,00786 $\rightarrow$ Two crore sixty lakh seven hundred eighty-six.

3. (a) 98,765,434 $\rightarrow$ Ninety-eight million seven hundred sixty five thousand four hundred thirty-four.
    (b) 76,382,949 $\rightarrow$ Seventy-six-million three hundred eighty-tow thousand Nine hundred forty-nine.
    (c) 45,654,670 $\rightarrow$ Forty five million six hundred fifty-four six hundred seventy.
    (d) 14,367,856,792 $\rightarrow$ Fourteen billion three hundred sixty seven million eight hundred fifty-six thousand seven hundred ninety-tow.

4. (a) **1,000** lakh $= 100$ million
    (b) **1,000** lakh $= 10$ crore
    (c) 1 billion $= $ **1,000** million

5. (a) $2, 43, 45, 892 \Rightarrow 2 \times 1,00,00,000 + 4 \times 10,00,000 + 3 \times 10,00,000 + 4 \times 10,000$
$$+ 4 \times 10,000 + 5 \times 1000 + 8 \times 100 + 9 \times 10 + 2 \times 1$$
    (b) $6,78,92,831 = 6 \times 100,00,000 + 7 \times 10,00,000, + 8 \times 100,000$
$$+ 9 \times 10,000 + 2 \times 1000 + 8 \times 100 + 3 \times 10 + 1 \times 1$$
    (c) $45,73,910 = 4 \times 10,00,000 + 5 \times 1,00,000 + 7 \times 10,000 + 3 \times 1000$
$$+ 9 \times 100 + 1 \times + 0$$
    (d) $2,34,56,410 = 2 \times 100,00,000 + 3 \times 10,00,000 + 4 \times 1,00,000 + 5 \times 1,0,000$
$$+ 6 \times 1000 + 4 \times 100 + 1 \times 10 + 0 \times 1$$

6. 2,85,73,89,507
    Place value of 7 is difference
$$= 7 \times 10,00,000 - 7 \times 1$$
$$= 7000000 - 7$$
$$= 69,99,993$$

7. (a) 6,87,90,456 $>$ 68,78,345   (b) 8,94,098 $>$ 89,409
    (c) 8,20,45,899 $=$ 8,20,45,899   (d) 41,03,678 $<$ 4,61,03,678

8. (a) 64,05,789 the successor number is 6405790
    (b) 9,99,99,999 the successor number is 10,00,00,000
    (c) 9,24,999 the successor number is 9,25,000.
    (d) 10,00,001

9. (a) 70,00,000 the predecessor Number is 69,99,999
    (b) 83,24,000 the predecessor number is 83,23,999
    (c) 45,68,909 the predecessor number is 45,68,908
    (d) 61,00,000 the predecessor number is 60,99,999

10. (a) Greatest $\rightarrow$ 27,09,835
        Smallest $\rightarrow$ 7,63,048
    (b) Greatest $\rightarrow$ 3,68,92,173
        Smallest $\rightarrow$ 12,37,689

11. (a) Greatest $\to$ 97,54,321 and Smallest $\to$ 12,34,579

(b) Greatest $\to$ 86,54,210 and Smallest $\to$ 10,24,568

Exercise 1.2

1. (a) 72

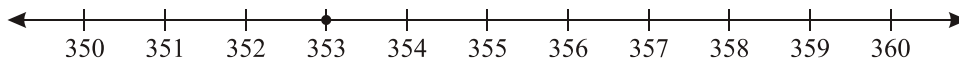Round off 72 to the nearest ten.

70 71 72 73 74 75 76 77 78 79 80
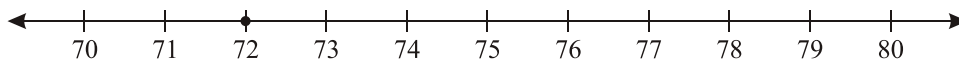
If take a number say 72, than it is nearer to 70 we will round off 72 to the Nearest ten as 70.

(b) Round off 98 to the Nearest ten.
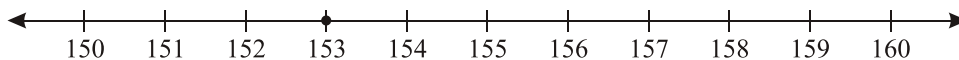

90 91 92 93 94 95 96 97 98 99 100
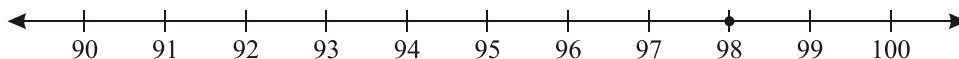
if take a number say 98 then it is nearer to 100

So, we will round off 98 to the Nearest ten as 100
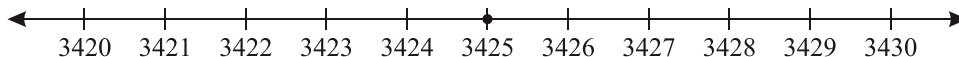
(c) Round off 353 to the Nearest ten.

350 351 352 353 354 355 356 357 358 359 360

353 is closer to 350 then to 360 so, 353 is rounded off to 350.

(d) Round off 154 to the Nearest ten

150 151 152 153 154 155 156 157 158 159 160

$\therefore$ 154 is closer to 150 then to 180, 50, 154 is rounded off to 150.

(e) Round off 3425 to the Nearest ten.

3420 3421 3422 3423 3424 3425 3426 3427 3428 3429 3430

$\therefore$ 3425 is closer to 3430 then to 3420

So, 3425 is rounded off to 3430.

(f) Round off 2847 to the Nearest ten.

2840 2841 2842 2843 2844 2845 2846 2847 2848 2849 2850
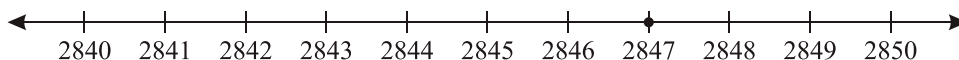
$\therefore$ 2847 is closer to 2850 then to 2840.

So, 2847 is rounded off to 2850.

(g) Round off 12643 to the nearest ten.

12640 12641 12642 12643 12644 12645 12646 12647 12648 12649 12650
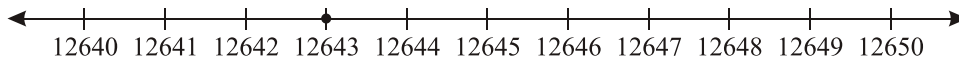
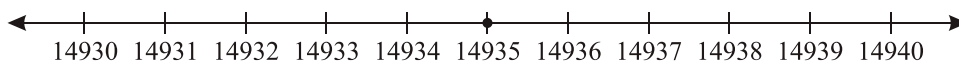$\therefore$ 12643 is closer to 12640 then to 12650.

So, 12643 is rounded off to 12640.

(h) 14935

Round off 14935 to the Nearest ten.

14930 14931 14932 14933 14934 14935 14936 14937 14938 14939 14940

∴ 14935 is closer to 14940 then to 14930.

So, 14935 is rounded off to 14940.

2. (a) Round off 895 to the Nearest hundred.

```
◄――┼――┼――┼――┼――┼――•――┼――┼――┼――┼――┼――►
    0  100 200 300 400 500 600 700 800 900 1000
```
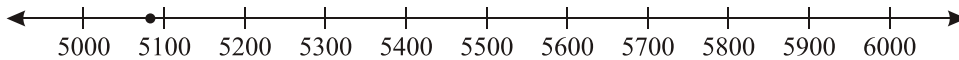
895 is closer to 900 then to 800, so, 895 is rounded off to 900.

(b) 6749

Round off 6794 to the Nearest hundred.

```
◄――┼――┼――┼――┼――┼――┼――┼――┼―•―┼――┼――►
  6000 6100 6200 6300 6400 6500 6600 6700 6800 6900 7000
```
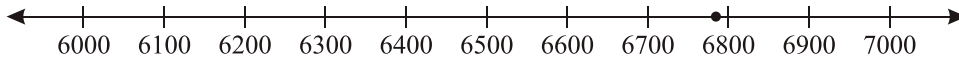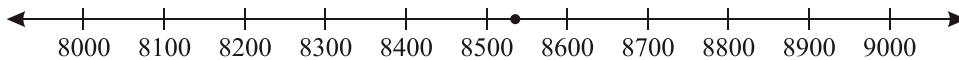
∴ 6794 is closer to 6800 than to 6700.

So, 6794 is rounded off to 6800.
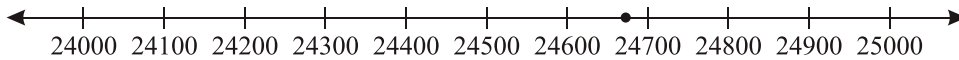
(c) Round off 5079 to the Nearest hundred.

```
◄――┼――┼―•―┼――┼――┼――┼――┼――┼――┼――┼――►
  5000 5100 5200 5300 5400 5500 5600 5700 5800 5900 6000
```

∴ 5079 is closer to 5100 than to 5000.

So, 5079 is rounded off to 5100

(d) Round off 80541 to the Nearest hundred.

```
◄――┼――┼――┼――┼――┼――•――┼――┼――┼――┼――┼――►
  8000 8100 8200 8300 8400 8500 8600 8700 8800 8900 9000
```
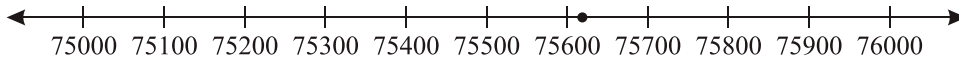
∴ 80541 is closer to 80500 than to 80,600

So, 80,541 is rounded off to 80,500.
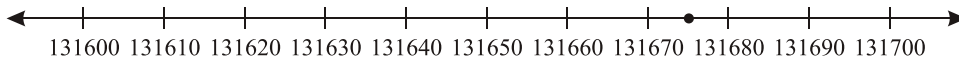
(e) Round off 24693 to the nearest hundred.

```
◄――┼――┼――┼――┼――┼――┼――┼―•―┼――┼――┼――┼――►
 24000 24100 24200 24300 24400 24500 24600 24700 24800 24900 25000
```

∴ 24693 is closer to 24700 than to 24600.

So, 24693 is rounded off to 24700,
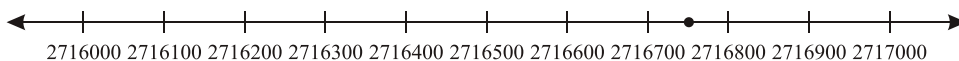
(f) Round off 75617 to the Nearest hundred.

```
◄――┼――┼――┼――┼――┼――┼――•――┼――┼――┼――┼――►
 75000 75100 75200 75300 75400 75500 75600 75700 75800 75900 76000
```

∴ 75617 is closer to 75600 them to 75700.

So, 75617 is rounded off to 75600.

(g) Round off 131675 to the nearest hundred.

```
◄――┼――┼――┼――┼――┼――┼――┼――┼―•―┼――┼――►
131600 131610 131620 131630 131640 131650 131660 131670 131680 131690 131700
```
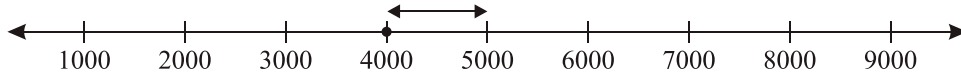
∴ 131675 is closer to 1,31,700 than to 1,31,600

So, 1,31,675 is rounded off to 1,31,700

(h) Round off 2716978 to the nearest hundred.

```
◄――┼――┼――┼――┼――┼――┼――┼――┼―•―┼――┼――►
2716000 2716100 2716200 2716300 2716400 2716500 2716600 2716700 2716800 2716900 2717000
```
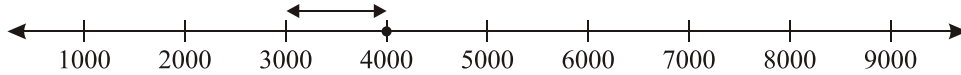
∴   2716978 is closer to, 27,17,000 than to 27,16,900.
   So, 2716978 is rounded off to 27,17,000

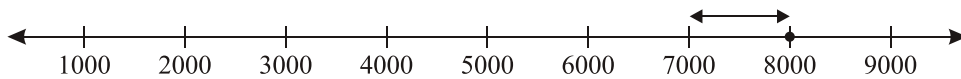**3.** (a) Round off 4499 to the nearest thousand.

∴   4499 is closer to 4000 than to 5000.
   So, 4499 is rounded off to 4000.

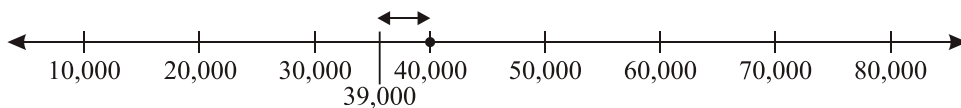(b) Rounded off 3764 to the Nearest thousand.

∴   3764 is closer to 4000 than to 3000.
   So, 3764 is rounded off to 4000.

(c) Rounded of 7951 to the Nearest thousand.

∴   7951 is closer to 8000 than to 6000.
   So, 7951 is rounded off to 8000.

(d) Rounded off 39357 to the Nearest thousand.

∴   39357 is closer to 40,000 than to 38000.
   So, 39357 is rounded of to 40,000.

(e) Rounded off 80502 to the nearest thousand.

∴   80502 is closer to 81,000 than to 80,000.
   So, 80502 is rounded off to 81,000

(f) Rounded off 34414 to the nearest thousand.

∴   34414 is closer to 34,000 than to 35000.
   So, 34414 is rounded off to 34000.
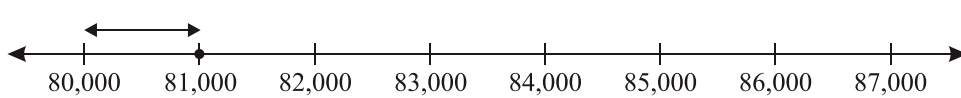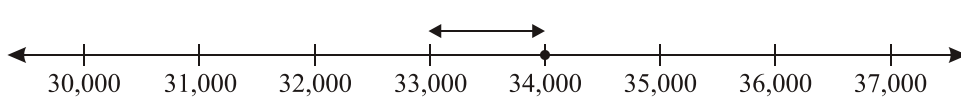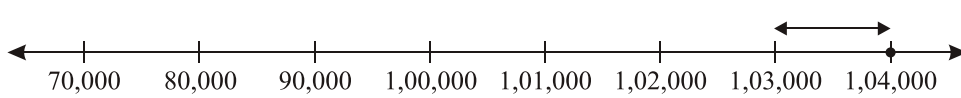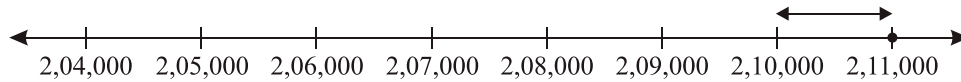
(g) Rounded off 10,3789 to the Nearest thousand.

∴   10,3789 is closer to 1,040,00 than to 1,030,00.
   So, 10,3789 is rounded off to 1,04,000.

(h) Rounded off 2,10,357 to the Nearest thousand.

| 2,04,000 | 2,05,000 | 2,06,000 | 2,07,000 | 2,08,000 | 2,09,000 | 2,10,000 | 2,11,000 |

∴   2,10,357 is closer to 2,10,000 than to 2,11,000
So, 2,10,357 is rounded off to, 2,10,000.

4. (a) Rounded off 1652563 to the Nearest lakh.

| 80,000 | 1,00,000 | 2,00,000 | 3,00,000 | 4,00,000 | 5,00,000 |
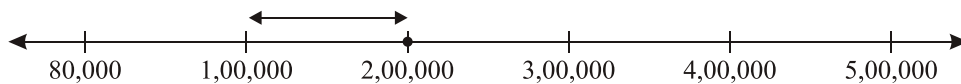
∴   1,65,203 is closer to 2,00,000 than to 1,00,000
So, 1,65,263 is rounded off to 2,00,000

(b) Rounded off 2,54,305 to the Nearest lakh.

| 1,60,000 | 1,80,000 | 2,00,000 | 2,50,000 | 3,00,000 | 4,00,000 |
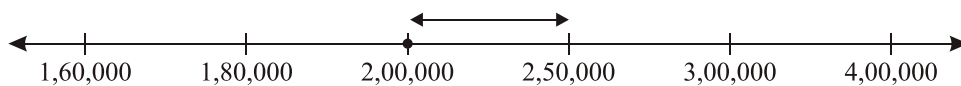
∴   2,54,305 is closer to 3,00,000 than to 2,00,000.
So, 2,54,305 is rounded off to 3,00,000.

(c) Rounded off 26,39,215 to the Nearest lakh.

| 22,00,000 | 23,00,000 | 24,00,000 | 25,00,000 | 26,00,000 | 27,00,000 |
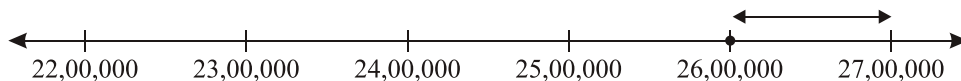
∴   26,39,215 is closer to 26,00,000 than to 27,00,000.
So, 26,39,215 is rounded off to 26,00,000.

(d) Rounded off 20,07,909 to the Nearest lakh.

| 17,00,000 | 18,00,000 | 19,00,000 | 20,00,000 | 21,00,000 | 22,00,000 |
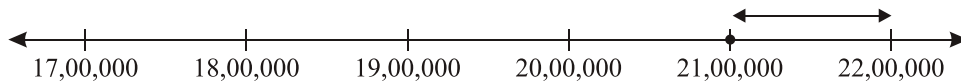
∴   20,07,909 s closer to 20,00,000 than to 21,00,000.
So, 20,07,909 is rounded off to 20,00,000.

(e) Rounded off 26,52,648 to the nearest lakh.

| 21,00,000 | 22,00,000 | 23,00,000 | 24,00,000 | 25,00,000 | 26,00,000 | 27,00,000 |
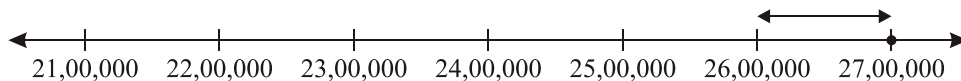
∴   26,52,648 is closer to 27,00,000 than to 26,00,000.
So, 26,52,648 is rounded off to 27,00,000.

(f) Rounded off 65,55,783 to the nearest lakh.

| 60,00,000 | 61,00,000 | 62,00,000 | 63,00,000 | 64,00,000 | 65,00,000 | 66,00,000 |
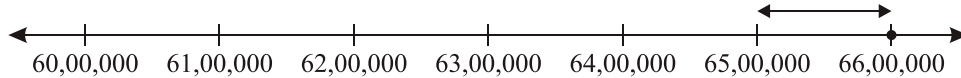
∴   65,55,783 is closer to 66,00,000 than to 65,00,000
So, 65,55,783 is rounded off to 66,00,000.

(g) Rounded off 16,51,243 to the Nearest lakh.

| 14,00,000 | 15,00,000 | 16,00,000 | 17,00,000 | 18,00,000 | 19,00,000 | 20,00,000 |

∴   16,51,243 is closer to 17,00,000 than to 16,00,000.
So, 16,51,243 is rounded off to 17,00,000.

(h)   Rounded off 5,21,66, 742 to the nearest lakh.

1,00,00,000 2,00,00,000 3,00,00,000 4,00,00,000 5,00,00,000 6,00,00,000 7,00,00,000
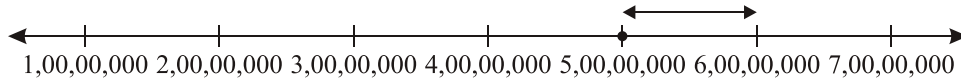
∴   5,21,66,742 is closer to 5,00,00,000 than to 6,00,00,000
So, 5,21,66,742 is rounded off to 5,00,00,000.

5.   The greatest 5-digit Number → 27499
The smallest 5-digit Number → 265000.

Exercise 1.3

1. (a)

66 estimated as	=		70
41 estimated as	=	+	40
estimated sum	=		110

(b)

77 estimated as	=		80
43 estimated as	=	+	40
estimated sum	=		120

(c)

882 estimated as	=		880
729 estimated as	=	+	730
estimated sum	=		1610

(d)

567 estimated as	=		570
432 estimated as	=	+	430
estimated sum	=		1000

2. (a)

369 estimated as	=		400
563 estimated as	=	+	600
estimated sum	=		1000

(b)

872 estimated as	=		900
560 estimated as	=	+	600
estimated sum	=		1500

(c)

854 estimated as	=		900
761 estimated as	=	+	800
estimated sum	=		1700

(d)

5,137 estimated as	=		5100
7,652 estimated as	=	+	7700
estimated sum	=		12,800

3. (a)

68 estimated as	=		70
42 estimated as	=	−	40
estimated sum	=		30

(b)

689 estimated as	=		690
432 estimated as	=	−	430
estimated sum	=		260

(c)

564 estimated as	=		560
321 estimated as	=	−	320
estimated sum	=		240

(d)

856 estimated as	=		860
672 estimated as	=	−	6700
estimated sum	=		190

4. (a)

674 estimated as	=		700
432 estimated as	=		400
estimated sum	=	−	300

(b)

689 estimated as	=		700
532 estimated as	=	−	400
estimated sum	=		200

(c)

764 estimated as	=		800
321 estimated as	=	−	300
estimated sum	=		500

(d)

956 estimated as	=		1000
572 estimated as	=	−	600
estimated sum	=		400

5. (a)   58 estimated as $= 60$
45 estimated as $= 50$
estimated product is $= 60 \times 50 = 3000$

(b)   67 estimated as $= 70$
33 estimated as $= 30$
estimated product is $= 70 \times 30 = 2100$

(c) 78 estimated as $= 80$
32 estimated as $= 30$
estimated product is $= 80 \times 30 = 2400$

(d) 23 estimated as $= 20$
98 estimated as $= 100$
estimated product is $= 20 \times 100 = 2000$

6. (a) 581 estimated as $= 600$
456 estimated as $= 500$
estimated product is $= 600 \times 500 = 30,00,00$

(b) 167 estimated as $= 200$
233 estimated as $= 200$
estimated product is $= 200 \times 200 = 40,000$

(c) 478 estimated as $= 500$
132 estimated as $= 100$
estimated product is $= 500 \times 100 = 50,000$

(d) 223 estimated as $= 200$
198 estimated as 200
estimated product is $= 200 \times 200 = 0,000$

7. (a) 345 estimated as $= 300$
46 estimated as $= 50$
estimated product is $= 300 \times 50 = 15,000$

(b) 3,427 estimated as $= 3000$
456 estimated as $= 500$
estimated product is $= 3000 \times 500 = 15,00,000$

(c) 2,192 estimated as $= 2000$
479 estimated as $= 500$
estimated product is $= 2000 \times 500 = 10,00,000$

(d) 9,876 estimated as $= 10,000$
estimated as $= 30$
estimated product is $= 10,000 \times 30 = 3,00,000$

8. (a) 567 estimated as $= 600$
24 estimated as $= 20$
estimated product is $= \dfrac{600}{20} = 30$

(b) 861 estimated as $= 900$
29 estimated as $= 30$
estimated product is $= \dfrac{900}{30} = 30$

(c) 347 estimated as $= 300$
13 estimated as $= 10$
estimated product is $= \dfrac{300}{10} = 30$

(d) 961 estimated as $= 700$
estimated as $= 20$
estimated product is $= \dfrac{700}{20} = 35$

9. 1712 coins is estimated as $\quad=\quad$ 1700

$\quad$ 1238 coins is estimated as $\quad=\quad+\quad$ 1200

$\quad$ total estimated coins $\quad\quad=\quad$ 2900

10. Sugar sold in 8 days $= 48 \times 8 = 384$

$\quad$ estimated sugar sold $= 400$ kg

$\quad$ estimated sugar had $= 600$ kg

$\quad$ estimated sugar left $= (600 - 400)$ kg $= 200$ kg

Exercise 1.4

1. **Number** $\quad\quad\quad\quad\quad\quad\quad\quad\quad$ **Roman Number**

$\quad$ (a) $\quad$ 24 $\quad\quad\quad\longrightarrow\quad\quad$ XXIV

$\quad$ (b) $\quad$ 45 $\quad\quad\quad\longrightarrow\quad\quad$ SLV

$\quad$ (c) $\quad$ 152 $\quad\quad\quad\longrightarrow\quad\quad$ CLII

$\quad$ (d) $\quad$ 1236 $\quad\quad\quad\longrightarrow\quad\quad$ MCCXXXVI

$\quad$ (e) $\quad$ 356 $\quad\quad\quad\longrightarrow\quad\quad$ CCCLVI

$\quad$ (f) $\quad$ 774 $\quad\quad\quad\longrightarrow\quad\quad$ DCCLXXIV

$\quad$ (g) $\quad$ 888 $\quad\quad\quad\longrightarrow\quad\quad$ DCCCLXXXVIII

$\quad$ (h) $\quad$ 2090 $\quad\quad\quad\longrightarrow\quad\quad$ MMXC

2. **Roman** $\quad\quad\quad\quad\quad\quad\quad\quad\quad$ **Number Number**

$\quad$ (a) $\quad$ XIX $\quad\quad\quad\longrightarrow\quad\quad$ 19

$\quad$ (b) $\quad$ XCVII $\quad\quad\quad\longrightarrow\quad\quad$ 97

$\quad$ (c) $\quad$ CDLXV $\quad\quad\quad\longrightarrow\quad\quad$ 465

$\quad$ (d) $\quad$ CLXXI $\quad\quad\quad\longrightarrow\quad\quad$ 171

$\quad$ (e) $\quad$ MDCLIV $\quad\quad\quad\longrightarrow\quad\quad$ 1654

$\quad$ (f) $\quad$ CCXLIX $\quad\quad\quad\longrightarrow\quad\quad$ 249

$\quad$ (g) $\quad$ MCDXII $\quad\quad\quad\longrightarrow\quad\quad$ 1412

$\quad$ (h) $\quad$ CCXCII $\quad\quad\quad\longrightarrow\quad\quad$ 292

3. (a) LVII = 57 meaningful $\quad\quad$ (b) VXVIII = Meaningless

$\quad$ (c) CLXXXX = Meaningless $\quad\quad$ (d) CCLXIV = 264 Meaningful

$\quad$ (e) MVXV = Meaningless $\quad\quad$ (f) LLL = Meaningless

4. (a) LV $\quad$ > $\quad$ XL $\quad\quad\quad\quad$ (b) CCC $\quad$ < $\quad$ D

$\quad$ (c) LXXI $\quad$ > $\quad$ XLIX $\quad\quad\quad$ (d) XLIV $\quad$ < $\quad$ LXIV

$\quad$ (e) XC $\quad$ > $\quad$ XL $\quad\quad\quad\quad$ (f) CMXIX $\quad$ < $\quad$ MCXIX

5. (a) $\quad$ XXXV + XL $= 10 + 10 + 10 + 5 + (50 - 10)$

$\quad\quad\quad\quad\quad\quad\quad\quad = 35 + 40 = 75$

$\quad\quad\quad\quad\quad\quad\quad\quad = $ LXXV

$\quad$ (b) $\quad$ LIX + XI $= 59 + 11 = 70$

$\quad\quad\quad\quad\quad\quad\quad = $ LXX

$\quad$ (c) $\quad$ XL + XXX $\quad = 40 + 30 = 70$

$\quad\quad\quad\quad\quad\quad\quad\quad = $ LXX

$\quad$ (d) $\quad$ L − XXXIX $\quad = 50 - 39 = 11$

$\quad\quad\quad\quad\quad\quad\quad\quad = $ XI

$\quad$ (e) $\quad$ XCII − LXV $= 92 - 65 = 27$

$\quad\quad\quad\quad\quad\quad\quad\quad = $ XXVII

$\quad$ (f) $\quad$ M + D + C + XI $\quad = 1000 + 500 + 100 + 11 = 1611$

$\quad\quad\quad\quad\quad\quad\quad\quad\quad = $ MDCXI

Multiple Choice Questions

1. (d) 495 **2.** (c) 1023 **3.** (b) 6,00,000 **4.** (a) 5 **5.** (a) 2,00,000 **6.** (a) 100 **7.** (b) 1240
8. (c) 1900 **9.** (a) CDXVI **10.** (a) 162


## 2   Whole Numbers

Exercise 2.1

1. 0 (zero) is the smallest whole number.

2. No

3. (a) The successor of $351070 = (351070 + 1) = 351071$

   (b) The successor of $900209 = (900209 + 1) = 900210$
   (c) The successor of $526703 = (526703 + 1) = 526704$
   (d) The successor of ten lakh $(10,00,000) = (10,00,000 + 1) = 10,00,000$

4. (a) The predecessor of $5700 = (5700 - 1) = 5699$

   (b) The predecessor of $799999 = (799999 - 1) = 799998$
   (c) The predecessor of one crore $(10000000) = (10000000 - 1) = 9999999$
   (d) The predecessor of one million $(10,00,000) = (10,00,000 - 1)$
   $$= 999999$$

5. (a) The following number line represents 9 whole number line on which whole numbers are represented.
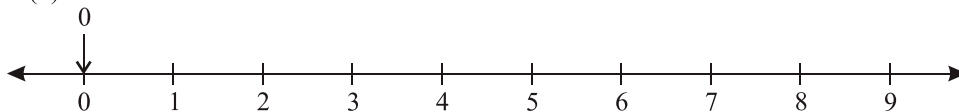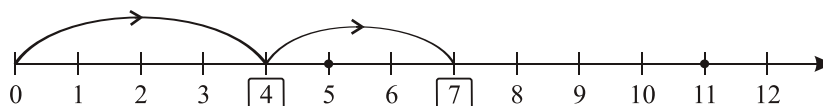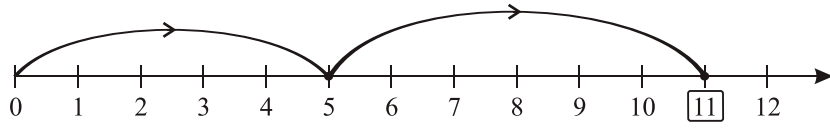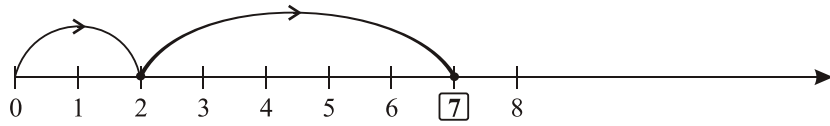

   (b)

   (c)

   (d)

6. (a) $4 + 3$

   $\therefore \quad 4 + 3 = 7$

Mathematics-6   **9**
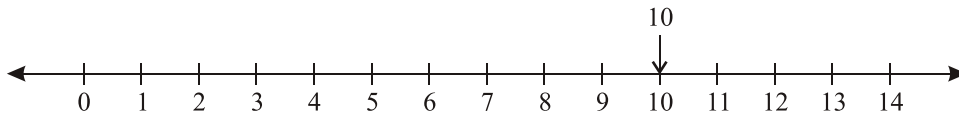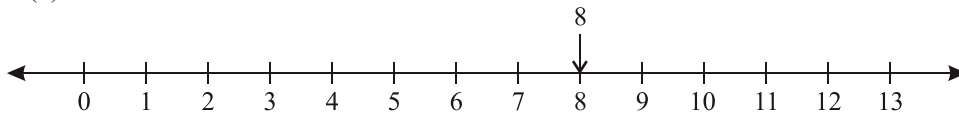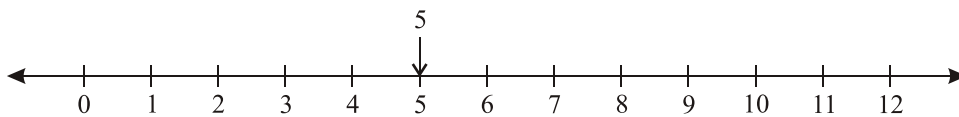
(b) 5 + 6

∴   5 + 6 = 11
(c) 2 + 5

∴   2 + 5 = 7
(d) 6 + 3
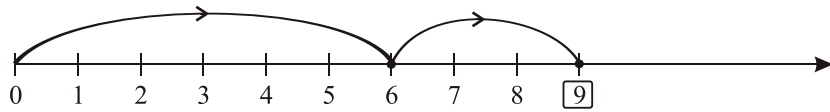
∴   6 + 3 = 9
(e) 6 − 5
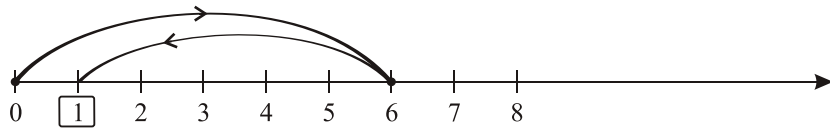
∴   6 − 5 = 1
(f) 8 − 3
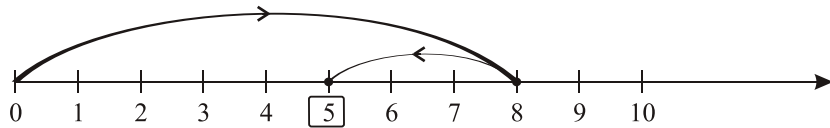
∴   8 − 3 = 5
(g) 6 − 4
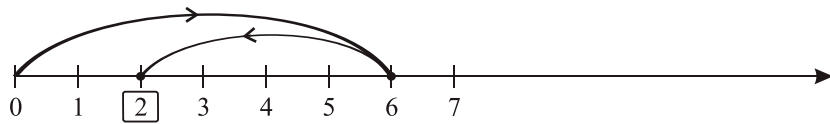
∴   6 − 4 = 2
(h) 10 − 3
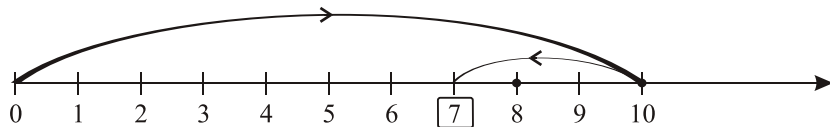
∴   10 − 3 = 7

(i) 2×9
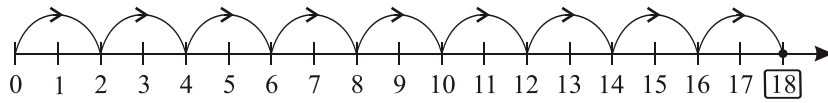
$\therefore$ $2 \times 9 = 18$

(j) 2×4
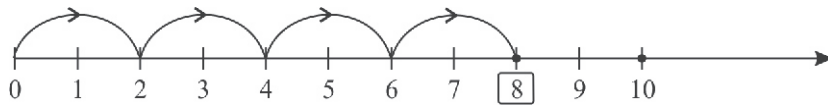
$\therefore$ $2 \times 4 = 8$

(k) 4×4
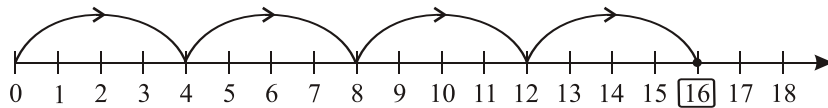
$\therefore$ $4 \times 4 = 16$

(l) 6×2
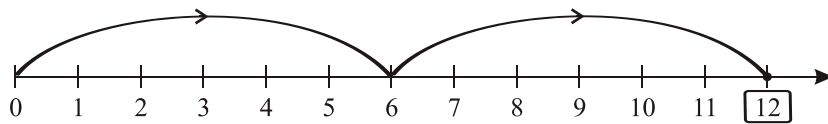
$\therefore$ $6 \times 2 = 12$

Exercise 2.2

1. (a) $7 \times 0 = \mathbf{0} = 0 \times \mathbf{7}$　(b) $1275 \div 1 = \mathbf{1275}$

   (c) $195 \times \mathbf{505} = 405 \times \mathbf{195}$　(d) $\mathbf{0} + 515 = 515$

   (e) $5 + (105 + 2) = (5 + \mathbf{105}) + 2$　(f) $128 \times (100 - 2) = 128 \times \mathbf{100} - 128 \times \mathbf{2}$

   (g) $5 \times 92 \times 20 = \mathbf{5} \times \mathbf{20} \times 92$　(h) $751 \div 751 = \mathbf{1}$

2. (a) $79 + 122 + 378 + 521 = 1100$

   (b) $234 + 266 + 508 = 1008$

   (c) $95 + 104 + 196 + 205 = 600$

3. (a) Use by associative property
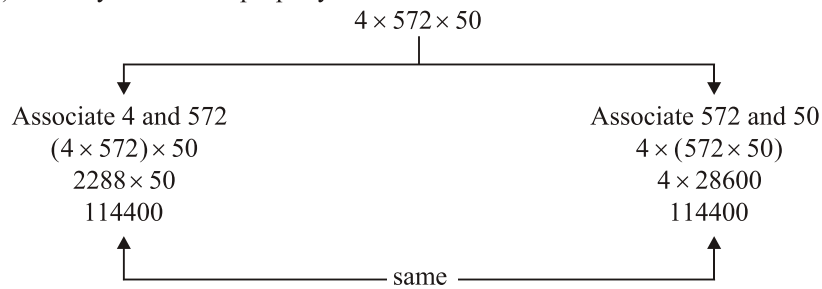
$$4 \times 572 \times 50$$

Associate 4 and 572	Associate 572 and 50
$(4 \times 572) \times 50$	$4 \times (572 \times 50)$
2288×50	4×28600
114400	114400

same

(b) Use by associative property

$$625 \times 777 \times 16$$

Associate 625 and 777
$(625 \times 777) \times 16$
485625×16
7770000

Associate 777 and 16
$625 \times (777 \times 16)$
625×12432
7770000

(c) Use by associative property

$$125 \times 799 \times 4$$

Associate 125 and 799
$(125 \times 799) \times 4$
99875×4
399500

Associate 799 and 4
$125 \times (799 \times 4)$
125×3196
399500

same

(d) Use by associative property

$$50 \times 29 \times 80$$

Associate 50 and 29
$(50 \times 29) \times 80$
1450×80
116000

Associate 29 and 80
$50 \times (29 \times 80)$
50×2320
116000
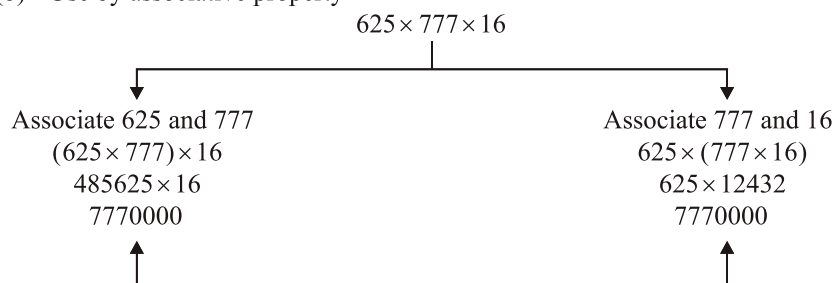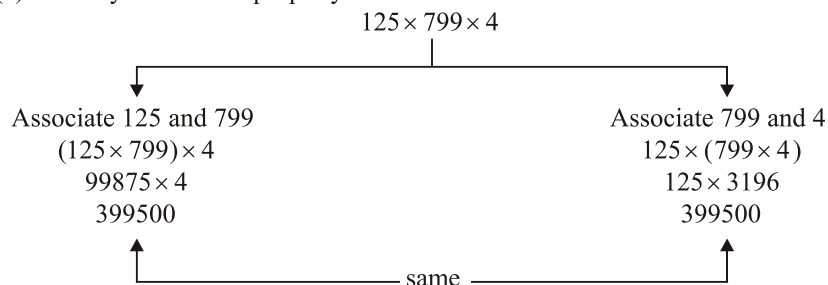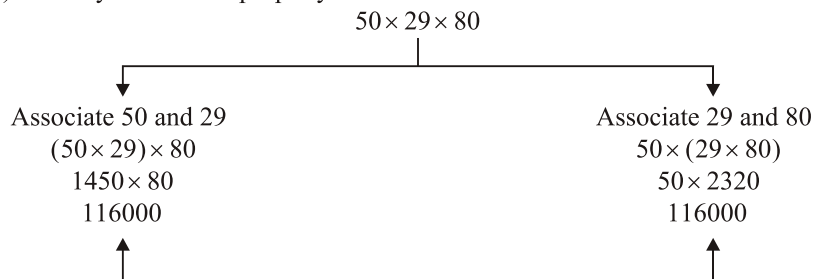
4. (a) $952 \times 15 - 5 \times 952$

$\qquad = 952 \times (15 - 5)$ (by distributive law)
$\qquad = 952 \times 10$
$\qquad = 9520$

(b) $1008 \times 8 + 1008 \times 92$

$\qquad = 1008 (8 + 2)$ (by distributive law)
$\qquad = 1008 \times 10$
$\qquad = 10080$

(c) $562 \times 4 \times 80 + 281 \times 20 \times 8 \times 4$

$\Rightarrow \qquad 562 \times 4 \times 80 + 281 \times 204 \times 2 \times 4$
$\Rightarrow \qquad 562 \times 4 \times 80 + 562 \times 80 \times 4$
$\Rightarrow \qquad 562 \times 4 \times 80 (1 + 1)$ (by distributive law)
$\Rightarrow \qquad 179840 \times 2 = 359680$

(d) $697 \times 25 \times 282 + 3485 \times 5 \times 718$

$\Rightarrow \qquad 697 \times 25 \times 282 + 697 \times 5 \times 5 \times 718$
$\qquad = 697 \times 25 (282 + 718)$ (by distributive law)
$\qquad = 17425 \times 1000$
$\qquad = 17425000$

5. (a) To prove
$$(3+5)+7 = 3+(5+7)$$

LHS $(3+5)+7$ RHS $3+(5+7)$

$$8+7 = 3+12$$
$$15 = 15$$
$\therefore$ $(3+5)+7 = 3+(5+7)$

(b) To prove
$$(2+4)+6 = 2+(4+6)$$

LHS $(2+4)+6$ RHS $2+(4+6)$

$$6+6 \qquad\qquad 2+0$$
$$12 = 12$$
$\therefore$ $(2+4)+6 = 2+(4+6)$

6.
LHS		RHS
$a-b$		$b-a$
$10-6$		$6-10$
4	$\neq$	-4

$\therefore$ $a-b \neq b-a$

7.
LHS		RHS
$a-b$		$b-a$
$256-175$		$175-256$
81	$\neq$	-81

8.
LHS		RHS
$a-(b-c)$		$(a-b)-c$
$12-(8-5)$		$(12-8)-5$
$12-3$	$\neq$	$4-5$
9	$\neq$	-1

$\therefore$ $a-(b-c) \neq (a-b)-c$

9.
LHS		RHS
$a-(b-c)$		$(a-b)-c$
$256-(362-182)$		$(256-362)-182$
$256-180$		$-106-182$
76	$\neq$	-288

$\therefore$ $a-(b-c) \neq (a-b)-c$

10. Verify that $b+c=a$ if $a-b=c$ for

(a) $b+c=a$ If $a-b=c$
$$5-3=c$$
$$2=c$$
$\therefore$ $b+c=a$
$$3+2=5$$
$$5=5$$

(b) If $a-b=c$
$$23-9=c$$
$$14=c$$
$\therefore$ $b+c=a$
$$9+14=23$$
$$23=23$$

11. (a) $a \times (b+c)$
$$= 4 \times (3+6)$$
$$= 4 \times 9$$
$$= 36$$

(b) $a \times b + a \times c$
$$= 4 \times 3 + 4 \times 6$$
$$= 12 + 24$$
$$= 36$$

12. If $a=8$, $b=5$ and $c=2$, find the following :

(a) $a \times (b-c)$
$$= 8 \times (5-2)$$
$$= 8 \times 3 = 24$$

(b) $ab - ac$
$$= 8 \times 5 - 8 \times 2$$
$$= 40 - 16 = 24$$

13. If $a = 84$ and $b = 4$, verify whether $a \div b \neq b \div a$.

To prove : $a \div b \neq b \div a$

LHS $a \div b$ RHS $b \div a$

           $= 84 \div 4$ $= 4 \div 84$

           $= 21$ $= \dfrac{4}{84} = \dfrac{1}{21}$

$\therefore$ $a \div b \neq b \div a$

14. (i) $456 \div 17$

     $\therefore$ dividend $= 456$;   divisor $= 17$

           Quotient $= 26$

           remainder $= 14$

           To prove: Dividend $=$ (divisor $\times$ quotient) $+$ remainder

                          $456 = (17 \times 26) + 14$

                          $456 = 442 + 14$

                          $456 = 456$ **verified**

```
       26
17 ) 456
    −34
     116
    −102
      14
```

     (ii) $259 \div 13$

     $\therefore$ Dividend $= 259$

           Quotient $= 19$

           Divisor $= 13$

           Remainder $= 12$

           To verify   Dividend $=$ Divisor $\times$ Quotient $+$ remainder

                          $259 = 13 \times 19 + 12$

                          $259 = 247 + 12$

                          $259 = 259$ **verified**

```
       13
19 ) 259
    −19
     69
    −57
     12
```

15. (i)   To verify $b \times c = a$

       If $a \div b = c$

       Now $56 \div 7 = c$ $\Rightarrow$ $8 = c$

   $\therefore$ $b \times c = a$

                $7 \times 8 = 56$

                  $56 = 56$ **verified**

     (ii)   To verify $b \times c = a$

       If $a \div b = c$

           $156 \div 13 = c$ $\Rightarrow$ $12 = c$

   $\therefore$ $b + c = a$

           $13 \times 12 = 156$

              $156 = 156$ **verified**

     (iii)   To verify $b \times c = a$

       If $a \div b = c$

           $187 \div 11 = c$

   $\therefore$ $b \times c = a$

           $11 \times 17 = 187$

             $187 = 187$ **verified**

16. Largest 5 digit number $= 99999$

Smallest 3 digit number $= 100$

difference $= (99999 - 100) = 99899$

17. One bed sheets rate $= ₹\ 350$
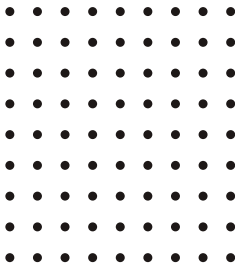
$\therefore$ 7 bed sheets rate $= 350 \times 7 = 2450$

agains,

one pillow covers rate $= ₹ 50$

$\therefore$ 13 pillow covers rate $= 50 \times 13 = ₹ 650$

The amount are the bed sheets and pillow covers $= 2450 + 650$

$= ₹ 3100$

Exercise 2.3

1. (a) $1 + 2 = 3$

   $1 + 2 + 3 = 6$

   $1 + 2 + 3 + 4 = 10$

   $1 + 2 + 3 + 4 + 5 = 15$

   $1 + 2 + 3 + 4 + 5 + 6 = 21$

   $1 + 2 + 3 + 4 + 5 + 6 + 7 = 28$

   (b) $37 \times 3 = 111$

   $37 \times 6 = 222$

   $27 \times 9 = 333$

   $37 \times 12 = 444$

   $37 \times 15 = 555$

   $37 \times 18 = 666$

   (c) $9 \times 9 + 7 = 88$

   $9 \times 98 + 6 = 888$

   $9 \times 987 + 5 = 8888$

   $9 \times 9876 + 4 = 88888$

   $9 \times 98765 + 3 = 888888$

   $9 \times 987654 + 2 = 8888888$

   (d) $46 \times 9 = 460 - 46$

   $46 \times 99 = 4600 - 46$

   $46 \times 999 = 46000 - 46$

   $46 \times 9999 = 460000 - 46$

   $46 \times 99999 = 4600000 - 46$

   $46 \times 999999 = 46000000 - 46$

2. (a) $6 =$

   (b) $10 =$

   (c) $12 =$

   (d) $14 =$

3. (a) $4 =$

   (b) $9 =$

   (c) $16 =$

   (d) $81 =$

4. (a) 6   (b) 10   (c) 21

(d) 28   (e) 36
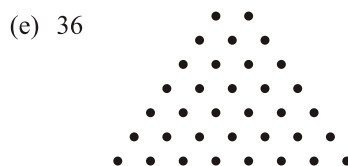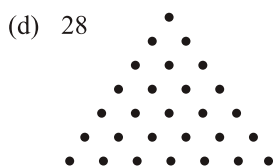
5. (a) $436+999$
$=436+1000-1$
$=1436-1=1435$

(b) $526+99$
$=526+100-1$
$=626-1=625$

(c) $829+999$
$=829+1000-1$
$=1829-1=1828$

(d) $1256-999$
$=1256-1000+1$
$=256+1=257$

(e) $1892-99$
$=1892-100+1$
$=1792+1=1793$

(f) 1256×99
$=1256\times(100-1)$
$=125600-1256=124344$

(g) 62939×9
$=629390\times(10-1$
$=629390-62939=566451$

5. (a)

2	9	4
7	5	3
6	1	8

(b)

9	2	7
4	6	8
5	10	3

Multiple Choice Question

1. (b) $18 \div 0$ **2.** (a) 41 **3.** (c) 1 **4.** (a) Yes **5.** (a) To the right of 504 **6.** (d) **7.** (b) 36 **8.** largest 4 digit number = 9999, smallest two digit number = 10, product of = $9999 \times 10 = 99990$ **9.** (a) 10 **10.** (c) 999

3

Playing with Numbers

Exercise 3.1

1. (a) $36=1\times36$
$36=2\times18$
$36=3\times12$
$36=4\times9$
$36=6\times6$
∴ Factors of 36 are −1, 2, 3, 4, 6, 9, 12, 18, 36

(b) $75 = 1 \times 75$
$75 = 3 \times 25$
$75 = 5 \times 15$
∴ Factors of 75 are 1, 3, 5, 15, 25, 75
(c) $120 = 1 \times 120$
$120 = 2 \times 60$
$120 = 3 \times 40$
$120 = 4 \times 30$
$120 = 5 \times 24$
$120 = 6 \times 20$
$120 = 8 \times 15$
$120 = 10 \times 12$
∴ factors of 120 are 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, 60, 120

2. (a) Multiples of $9 = 9, 18, 27, 36$

(b) Multiples of $12 = 12, 24, 36, 48$
(c) Multiples of $17 = 17, 34, 51, 68$

3. (a) Prime numbers between 1 and 20 are   2, 3, 5, 7, 11, 13, 17, 19
(b) Prime numbers between 28 and 44 are 29, 31, 37, 41, 43
(c) Prime numbers between 90 and 120 are 97, 101, 103, 107, 109, 113

4. (a) $30 = 19 + 11$ (b) $64 = 3 + 61$ (c) $98 = 19 + 79$

5. (a) 18, 35 are co-prime   ∵   HCF of 18 and 35 = 1
(b) 27, 36 are not co-prime   ∵   HCF of 27 and 36 is not 1
(c) 10, 21 are co-prime   ∵   HCF of 10 and 21 = 1

6. All the even number between 40 and 60
42, 44, 46, 48, 50, 52, 54, 56, 58, 60

7. All the odd number less than 20.
1, 3, 5, 7, 9, 11, 13, 15, 17, 19

8. (a) A number which has only two factors is called a **prime numbers.**
(b) 1 is neither a **prime**, nor a **composite** number.
(c) Every number is a **factor** and **multiple** of itself.
(d) A number which having more than two factors is called **composite** number.
(e) **2** is the smallest prime number.
(f) **4** is the smallest composite number.
(g) **0** is the smallest even number.

Exercise 3.2

Number	2	4	8	5	10
(a) 128	✓	✓	✓	✗	✗
(b) 572	✓	✓	✗	✗	✗
(c) 990	✓	✗	✗	✓	✓
(d) 1586	✓	✗	✗	✗	✗
(e) 6225	✗	✗	✗	✓	✗
(f) 66660	✓	✓	✗	✓	✓

Number					
(g) 54795	✗	✗	✗	✓	✗
(h) 726352	✓	✓	✓	✗	✗
(i) 639210	✓	✗	✗	✓	✓
(j) 297144	✓	✓	✓	✗	✗

2.

Number	3	6	7	9	11
(a) 1258	✗	✗	✗	✗	✗
(b) 5335	✗	✗	✗	✗	✓
(c) 21084	✓	✓	✓	✗	✗
(d) 71232	✓	✓	✓	✗	✗
(e) 10824	✓	✓	✗	✗	✓
(f) 639216	✓	✓	✗	✓	✗
(g) 10000001	✗	✗	✗	✗	✓
(h) 901351	✗	✗	✗	✗	✓
(i) 1790184	✓	✓	✗	✗	✓
(j) 438750	✓	✓	✗	✓	✗

3. If a number is divisible by 2 and 7 then it will be divisible by 14 e.g.
28 is divisible 2 and 7 both
∴   28 is divisible by 14 also

4. No, if a number which is divisible by 4 and 6 it is not necessarily divisible by 24 e.g. 12 is divisible by 6 and 4 both but 12 is not divisible by 24

5. 2430780
twice of last digit $= 2 \times 0 = 0$
number formed by remaining digits $= 243078$
difference $= 243078 - 0 = 243078$
243078 is not a multiple of 7
∴   2430780 is not divisible by 7

6. If a number divisible by both 5 and 12
∴   60 is the other number by which that number is always divisible

7. If a number is divisible by 12 then it will be divisible by factors of 12 also i.e. 1, 2, 3, 4, 6, 12

Exercise 3.3

1. (a)   factors of 10 = 1, 2, 5, 10
factors of 15 = 1, 3, 5, 15
common factors of 10 and 15 are 1, 5

(b) factors of 16 = 1, 2, 4, 8, 16
factors of 20 = 1, 2, 4, 5, 10, 20
common factors of 16 and 20 are 1, 2, 4

(c) factors of 21 = 1, 3, 7, 21
factors of 35 = 1, 5, 7, 35
common factors of 21 and 35 are 1, 7

(d) 3, 6 and 9
factors of 3 = 1, 3
factor of 6 = 1, 2, 3
factor of 9 = 1, 3, 9
common factors of 3, 6 and 9 are 1, 3

(e) factors of 8 = 1, 2, 4, 8
factors of 12 = 1, 2, 3, 4, 6, 12
factors of 20 = 1, 2, 4, 5, 10, 20
common factors of 8, 12, and 20 are 1, 2, 4

(f) factors of 45 = 1, 5, 3, 9, 15, 45
factors of 60 = 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60
factors of 105 = 1, 3 5, 7, 15, 21, 35, 105
common factors of 45, 60 and 105 are 1, 3, 5, 15

2. (a) Multiple of 8 = 8, 16, ⟨24⟩, 32, 40, ⟨48⟩, 56, 64, ⟨72⟩

Multiple of 12 = 12, ⟨24⟩, 36, ⟨48⟩, 60, ⟨72⟩, 84, 96

first three common multiple of 8 and 12 are 24, 48, 72

(b) Multiple of 6 = 6, 12, ⟨18⟩, 24, 30, ⟨36⟩, 42, 48, ⟨54⟩

Multiple of 9 = 9, ⟨18⟩, 27, ⟨36⟩, 45, ⟨54⟩, 63

first three common multiple of 6 and 9 are 18, 36, 54

(c) Multiple of 10 = 10, 20, 30, 40, ⟨50⟩, 60, 70, 80, 90 ⟨100⟩, 110, 120, 130, 140, ⟨150⟩

Multiple of 25 = 25, ⟨50⟩, 75, ⟨100⟩, 125, ⟨150⟩, 175

first three common multiple of 50, 100, 150

3. Multiple of 5 = 5, 10, 15, 20, 25, ⟨30⟩, 35, 40, 45, 50, 55, ⟨60⟩, 65, 70, 75, 80, 85

Multiple of 6 = 6, 12, 18, 24, ⟨30⟩, 36, 42, 48, 54, ⟨60⟩, 66, 72, 78, 84, 90

Common multiple number less than 90 are 30, 60

4. Other number = factors of 15
= 1, 3, 5, 15

5. (a) 13 and 16
All possible factors of 13 = ⟨1⟩, 13

All possible factors of 16 = ⟨1⟩, 2, 4, 8, 16

1 is the only common factors of 13 and 16.
∴ 13 and 16 co-prime.

(b) 16 and 21
All possible factors of 16 = ⟨1⟩, 2, 4, 8, 16

All possible factors of 21 = ⟨1⟩, 3, 7, 21

1 is the only common factors of 16 and 21

∴　16 and 21 co-prime.

(c)　25 and 105

All possible factors of 25 = (1), 5, 25

All possible factor of 105 = (1), 5, 3, 7, 15, 21, 35, 105

1 and 5 have common factors other than 1.

∴　25 and 105 are not co-prime.

6.　Factor of 5 = 5, 10, 15, 20, 25, 30, 35, (40), 45, 50

Factor of 8 = 8, 16, 24, 32, (40), 48, 56, 64

40 number will be always diviblle 5 and 8.

Exercise 3.4

1.　Factor free method
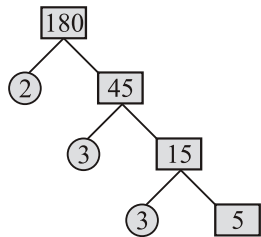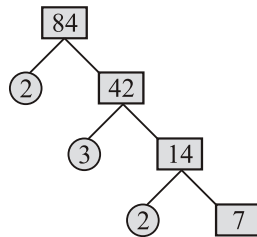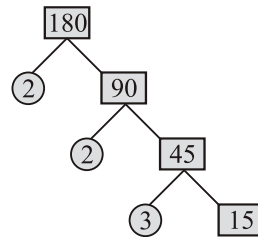
∴　$90 = 2 \times 3 \times 3 \times 5$　　∴　$84 = 2 \times 3 \times 2 \times 7$　　∴　$180 = 2 \times 2 \times 3 \times 15$

2.　(a)

2	24
2	12
2	6
2	3
	1

(b)

2	28
2	14
7	7
	1

(c)

2	36
2	18
3	9
3	3
	1

∴　$24 = 2 \times 2 \times 2 \times 3$　　∵　$28 = 2 \times 2 \times 7$　　∴　$36 = 2 \times 2 \times 3 \times 3$

(d)

3	81
3	27
3	9
3	3
	1

(e)

2	96
2	48
2	24
2	12
2	6
3	3
	1

(f)

2	36
2	18
2	30
3	15
5	5
	1

∴　$81 = 3 \times 3 \times 3 \times 3$　　∴　$96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$　　∴　$120 = 2 \times 2 \times 2 \times 3 \times 5$

(g)

2	180
2	90
3	45
3	15
5	5
	1

(h)

2	256
2	128
2	64
2	32
2	16
2	8
2	4
2	2
	1

(i)

2	468
2	234
3	117
3	39
13	13
	1

$\therefore 180 = 2 \times 2 \times 3 \times 3 \times 5$ $\therefore 468 = 2 \times 2 \times 3 \times 3 \times 13$ $\therefore 256 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$

(j)

2	630
3	315
3	105
5	35
7	7
	1

(k)

2	1024
2	512
2	256
2	128
2	64
2	32
2	16
2	8
2	4
2	2
	1

(l)

2	2200
2	1100
2	550
5	275
5	55
11	11
	1

$\therefore 630 = 2 \times 3 \times 3 \times 5 \times 7$ $\therefore 2200 = 2 \times 2 \times 2 \times 5 \times 5 \times 11$ $\therefore 1024 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$

3. Smallest 4-digit number is 1000   Largest 4-digit number is 9999

2	1000
2	500
2	250
5	125
5	25
5	5
	1

3	9999
3	3333
11	1111
101	101
	1

$\therefore 1000 = 2 \times 2 \times 2 \times 5 \times 5 \times 5$ $\therefore 9999 = 3 \times 3 \times 11 \times 101$

4.

7	1729
13	247
19	19
	1

$\therefore$ $1729 = 7 \times 13 \times 19$

Exercise 3.5

1. (a)

2	42
3	21
7	7
	1

2	56
2	28
2	14
7	7
	1

Prime factors of $42 = 2 \times 3 \times 7$
Prime factors of $56 = 2 \times 2 \times 2 \times 7$
HCF $= 2 \times 7 = 14$

(b)

2	24
2	12
2	6
3	3
	1

2	72
2	36
2	18
3	9
3	3
	1

Prime factors of $24 = 2 \times 2 \times 2 \times 3$
Prime factors of $72 = 2 \times 2 \times 2 \times 3 \times 3$
HCF of 24 and $72 = 2 \times 2 \times 2 \times 3 = 24$

(c)

3	39
13	13
	1

2	52
2	26
13	13
	1

Prime factors of $39 = 3 \times 13$
Prime factors of $52 = 2 \times 2 \times 13$
HCF of 39 and $52 = 13$

(d)

2	44
2	22
11	11
	1

7	77
11	11
	1

Prime factors of $44 = 2 \times 2 \times 11$
Prime factors of $77 = 7 \times 11$
HCF of 44 and $77 = 11$

(e)

3	345
5	115
23	23
	1

2	506
11	253
23	23
	1

Prime factors of $345 = 3 \times 5 \times 23$
Prime factors of $506 = 2 \times 11 \times 23$
$\therefore$ HCF of 345 and $506 = 23$

(f)

3	69
23	23
	1

23	253
11	11
	1

Prime factors of $69 = 3 \times 2 \times 23$
Prime factors of $253 = 23 \times 11$
HCF of 69 and $253 = 23$

2. (a)

$$390\,\overline{)\,520\,}\,(1$$
$$\underline{-390}$$
$$130\,\overline{)\,390\,}\,(3$$
$$\underline{-390}$$
$$\times$$

∴ HCF of 390 and 520 is 130

(b)

$$10549\,\overline{)\,13563\,}\,(1$$
$$\underline{-10549}$$
$$3014\,\overline{)\,10549\,}\,(3$$
$$\underline{-9042}$$
$$1507\,\overline{)\,3014\,}\,(2$$
$$\underline{-3014}$$
$$0$$

∴ HCF of 10549 and 13563 = 1507

(c)

$$2628\,\overline{)\,8541\,}\,(3$$
$$\underline{-7884}$$
$$657\,\overline{)\,2628\,}\,(4$$
$$\underline{-2628}$$
$$0$$

∴ HCF of 2628 and 8541 is 657

(d)

$$1197\,\overline{)\,1311\,}\,(1$$
$$\underline{-1197}$$
$$114\,\overline{)\,1197\,}\,(10$$
$$\underline{-1140}$$
$$57\,\overline{)\,114\,}\,(2$$
$$\underline{-114}$$
$$0$$

∴ HCF of 1197 and 1311 is 57
Now HCF of 57 and 627
∴ HCF of 1197, 1311 and 627 is 57

$$57\,\overline{)\,627\,}\,(1$$
$$\underline{-57}$$
$$57$$
$$\underline{-57}$$
$$0$$

3. (a)

$$\frac{348}{1024}$$

∴ HCF of 348 and 1024 = 4

∴ $\dfrac{348 \div 4}{1024 \div 4} = \dfrac{87}{256}$

$$348\,\overline{)\,1024\,}\,(2$$
$$\underline{-696}$$
$$328\,\overline{)\,348\,}\,(1$$
$$\underline{-328}$$
$$20\,\overline{)\,328\,}\,(1$$
$$\underline{-20}$$
$$128$$
$$\underline{-120}$$
$$8\,\overline{)\,20\,}\,(2$$
$$\underline{-16}$$
$$4\,\overline{)\,8\,}\,(2$$
$$\underline{-8}$$
$$\times$$

(b)

$$\frac{744}{1023}$$

∴ HCF of 744 and 1023 = 93

∴ $\dfrac{744 \div 93}{1023 \div 93} = \dfrac{8}{11}$

$$744\,\overline{)\,1023\,}\,(1$$
$$\underline{-744}$$
$$279\,\overline{)\,744\,}\,(2$$
$$\underline{-558}$$
$$186\,\overline{)\,279\,}\,(1$$
$$\underline{-186}$$
$$93\,\overline{)\,186\,}\,(2$$
$$\underline{-186}$$
$$\times$$

(c) $\dfrac{625}{3125}$

$\therefore$ HCF of 625 and 3125 is 625

$\therefore \quad \dfrac{625 \div 625}{3125 \div 625} = \dfrac{1}{5}$

$$625 \overline{)\ 3125\ } (1258$$
$$\underline{-3125}$$
$$\underline{\times}$$

(d) $\dfrac{117}{270}$

$\therefore$ HCF of 117 and 270 is 9

$\therefore \quad \dfrac{117 \div 9}{270 \div 9} = \dfrac{13}{30}$

$$177 \overline{)\ 270\ } (2$$
$$\underline{-234}$$
$$36 \overline{)\ 117\ } (3$$
$$\underline{-108}$$
$$9 \overline{)\ 36\ } (4$$
$$\underline{-36}$$
$$\underline{0}$$

4. $348 - 3 = 345,\ 626 - 5 = 621$

$\because$ 69 is the largest number that divides 348 and 626 leaving remainders 3 and 5 respectively

$$345 \overline{)\ 621\ } (1$$
$$\underline{-345}$$
$$276 \overline{)\ 345\ } (1$$
$$\underline{-276}$$
$$69 \overline{)\ 276\ } (4$$
$$\underline{-276}$$
$$\underline{0}$$

5. $283 - 3 = 280,\ 390 - 5 = 385,\ 532 - 7 = 525$

Now HCF of 35 and 525

$$35 \overline{)\ 525\ } (1258$$
$$\underline{35}$$
$$175$$
$$\underline{-175}$$
$$\underline{0}$$

$$280 \overline{)\ 385\ } (1$$
$$\underline{-280}$$
$$105 \overline{)\ 280\ } (2$$
$$\underline{-210}$$
$$70 \overline{)\ 105\ } (1$$
$$\underline{-70}$$
$$35 \overline{)\ 70\ } (2$$
$$\underline{-70}$$
$$\underline{0}$$

$\therefore$ 35 is the largest number that divides 283, 390 and 532 leaving remainders 3, 5 and 7 respectively

$\therefore$ HCF of 280, 385 and 525 is 35

6. $398 - 7 = 391,\ 436 - 11 = 425,\ 542 - 15 = 527$

$$391 \overline{)\ 425\ } (1$$
$$\underline{-391}$$
$$34 \overline{)\ 391\ } (11$$
$$\underline{-\ 34}$$
$$51$$
$$\underline{-34}$$
$$17 \overline{)\ 34\ } (2$$
$$34$$
$$\underline{0}$$

$$17 \overline{)\ 527\ } (31$$
$$\underline{-51}$$
$$17$$
$$\underline{-17}$$
$$\underline{0}$$

$\therefore$ 17 is the largest number that divides 398, 436, and 542 respectively

HCF of 391, 425, 527 is 17.

7. Now HCF of 22.4 m and 18.9.
Then 22.4 multiply of 10 = 224
and   18.9 multiply of 10 = 189
Thus HCF of 224 and 189

$$189\overline{)224}(1$$
$$\underline{-189}$$
$$35\overline{)189}(5$$
$$\underline{-175}$$
$$14\overline{)35}(2$$
$$\underline{-28}$$
$$7\overline{)14}(2$$
$$\underline{-14}$$
$$\underline{0}$$

    HCF of 224 and 189 is 7
∴   HCF f 22.4 and 18.9 is 70
∴   The largest squaretail 70 cm of laid.

8. The maximum capacity of a container will be the HCF of 465 l, 403 l, and 434 l
Then

$$403\overline{)434}(1 \qquad\qquad 31\overline{)465}(15$$
$$\underline{-403} \qquad\qquad\qquad \underline{-31}$$
$$31\overline{)403}(13 \qquad\qquad 155$$
$$\underline{-31} \qquad\qquad\qquad \underline{-155}$$
$$\underline{0} \qquad\qquad\qquad \underline{0}$$

Hence the maximum capacity of a confuiner is 31 letres.

9. The largest rod of the measure of will be the HCF of 9.76 m, 7.93 m and 1.83
∴ 9.76 multiply of 100 = 976 cm
   7.83 multiply of 100 = 793 cm
   183 multiply of 100 = 183 cm
Then HCF of 976, 793 and 183

$$183\overline{)793}(4 \qquad\qquad 61\overline{)976}(16$$
$$\underline{-732} \qquad\qquad\qquad \underline{-61}$$
$$61\overline{)183}(3 \qquad\qquad 366$$
$$\underline{-183} \qquad\qquad\qquad \underline{-366}$$
$$\underline{0} \qquad\qquad\qquad \underline{0}$$

∴ HCF of 976, 793 and 183 and = 61 cm
∴ The longest rod of measure 61 cm.

Exercise 3.6

1. (a) 8, 20

2	8
2	4
2	2
	1

2	20
2	10
5	5
	1

The pride factors of 8 = 2 × 2 × 5
The prime factor of 20 = 2 × 2 × 5

L.C.M = $2 \times 2 \times 2 \times 5 = 40$

(b) 20, 32

The prime factors of 20 = $\boxed{2}$ × $\boxed{2}$ × 5

The prime factor of 32 = $\boxed{2}$ × $\boxed{2}$ × 2 × 2 × 2

L.C.M. = 2 × 2 × 5 × 2 × 2 × 2

= 32 × 5

= 160

(c) 40, 50

The prime factors of 40 = $\boxed{2}$ × 2 × 2 × 5

The prime factors of 50 = $\boxed{2}$ × 5 × 5

L.C.M. = 2 × 5 × 2 × 2 × 5

= 8 × 25

= 200

(d) The prime factors of 30 = $\boxed{2}$ × $\boxed{3}$ × 5

The prime factors of 36 = $\boxed{2}$ × 2 × $\boxed{3}$ × 3

The prime factors of 40 = $\boxed{2}$ × 2 × 2 × 5

L.C.M. = 2 × 2 × 3 × 5 × 3 × 2

= 8 × 9 × 5

= 40 × 9

= 360

(e) The prime factors of 12 = $\boxed{2}$ × $\boxed{2}$ × 3

The prime factors of 20 = $\boxed{2}$ × $\boxed{2}$ × 5

The prime factors of 24 = $\boxed{2}$ × $\boxed{2}$ × 2 × 3

L.C.M. = 2 × 2 × 3 × 5 × 2

= 8 × 15

= 120

(f) The prime factors of 8 = $\boxed{2}$ × $\boxed{2}$ × 2

The prime factors of 10 = $\boxed{2}$ × 5

The prime factors of 12 = $\boxed{2}$ × $\boxed{2}$ × 3

L.C.M. = 2 × 2 × 2 × 5 × 3

= 8 × 15

= 120

2. (a)

2	60, 75
2	30, 75
3	15, 75
5	5, 25
5	1, 5
	1, 1

(b)

2	48, 60, 80
2	24, 30, 40
2	12, 15, 20
2	6, 15, 10
3	3, 15, 5
5	1, 5, 1
	1, 1, 1

L.C.M of 60, 75 = 2 × 2 × 3 × 5 × 5

= 60 × 5

= 300

L.C.M of 48, 60, 80

= 2 × 2 × 2 × 2 × 3 × 5

= 48 × 5

= 240

(c)

2	30, 54, 63
3	15, 27, 63
3	5, 9, 21
3	5, 3, 7
5	5, 1, 7
7	1, 1, 7
	1, 1, 1

L.C.M of 30, 54, 63
$$= 2 \times 3 \times 3 \times 3 \times 5 \times 7$$
$$= 54 \times 5 \times 7$$
$$= 54 \times 35$$
$$= 1890$$

(d)

2	18, 60, 72
2	9, 30, 36
2	9, 15, 18
3	9, 15, 9
3	3, 5, 3
5	1, 5, 1
	1, 1, 1

L.C.M. of 18, 60, 72
$$= 2 \times 2 \times 2 \times 3 \times 3 \times 5$$
$$= 24 \times 15$$
$$= 360$$

(e)

2	240, 420, 660
2	120, 210, 330
2	60, 105, 165
2	30, 105, 165
3	15, 105, 165
5	5, 35, 55
7	1, 7, 11
11	1, 1, 11
	1, 1, 1

L.C.M of 240, 420, 660
$$= 2 \times 2 \times 2 \times 2 \times 3 \times 5 \times 7 \times 11$$
$$= 48 \times 35 \times 11$$
$$= 18480$$

(f)

2	144, 180, 384
2	72, 90, 192
2	36, 45, 96
2	18, 45, 48
2	9, 45, 24
2	9, 45, 12
2	9, 45, 6
3	9, 45, 3
3	3, 15, 1
5	1, 5, 1
	1, 1, 1

L.C.M of 144, 180, 384
$$= 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5$$
$$= 129 \times 9 \times 5 = 128 \times 45$$
$$= 5760$$

3. LCM of 18, 37

2	18, 37
3	9, 37
3	3, 37
37	1, 37
	1, 1

$\therefore$ LCM $= 2 \times 3 \times 3 \times 37 = 666$

$\therefore$ smallest number which when divided by 18 and 37 leaves remainder 3 in each case is $666 + 3 = 669$

4. They will toll again after LCM of 16, 24, 32

$\therefore$ LCM

2	16, 24, 32
2	8, 12, 16
2	4, 6, 8
2	2, 3, 4
2	1, 3, 2
3	1, 3, 1
	1, 1, 1

bell will toll again after $2 \times 2 \times 2 \times 2 \times 2 \times 3$
$$= 96 \,\text{seconds}$$

5. They will be at starting point again after LCM of 110, 130 and 150

2	110, 130, 150
3	55, 65, 75
5	55, 65, 25
5	11, 13, 5
11	11, 13, 1
13	1, 13, 1
	1, 1, 1

$\therefore$ they will be a starting point again after $(2 \times 3 \times 5 \times 5 \times 11 \times 13)$ seconds, 21450 seconds 357.5 minutes

6. Least number of shots are LCM of $(28, 32, 42) + 5$

2	28, 32, 42
2	14, 16, 21
2	7, 8, 21
2	7, 4, 21
2	7, 2, 21
3	7, 1, 21
7	7, 1, 7
	1, 1, 1

Least number of shots a help contain $= (2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 7) + 5$
$$= (32 \times 21) + 5$$
$$= 672 + 5 = 677 \text{ shots}$$

7. Minimum distance is LCM of 80, 85, 90

2	80, 85, 90
2	40, 85, 45
2	20, 85, 45
2	10, 85, 45
3	5, 85, 45
3	5, 85, 15
5	5, 85, 5
17	1, 17, 1
	1, 1, 1

$\therefore$ Minimum distance three persons walk so that all can cover same distance in complete steps is
$$= (2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 17)$$
$$= 12240 \text{ cm or } 122.40 \text{ m}$$

Exercise 3.7

1. $\because$ LCM × HCF = Product of numbers

$\therefore$ LCM × 24 = 4800

$$LCM = \frac{4800}{24} = 200$$

2. $\because$ LCM × HCF = Ist no. × IInd no.

$1666 \times 17 = 119 \times$ IInd no.

$$\frac{1666 \times 17}{119} = \text{IInd no.}$$

$238 = $ IInd no.

3. $\because$ LCM × HCF = Product of numbers

$\therefore$ 782 × HCF = 1564

$$HCF = \frac{1564}{782} = 2$$

4. HCF of 3, 4, 5

$\therefore$ $LCM = 2 \times 2 \times 3 \times 5 = 60$

$HCF = 1$

Product of numbers $= 3 \times 4 \times 5 = 60$

$LCM \times HCF = 1 \times 60 = 60$

Yes, product of numbers = HCF × LCM

2	3, 4, 5
2	3, 2, 5
3	3, 1, 5
5	1, 1, 5
	1, 1, 1

5. $\because$ 17 is not the factor of 999

$\therefore$ If HCF = 17

then LCM cannot be 999

```
        58
17 ) 999
     85
    ───
     149
     136
     ───
      13
```

6. $\because$

```
          2
1111 ) 2222
       2222
       ────
          0
```

$\therefore$ HCF = 1111

$\therefore$ $LCM = 2 \times 11 \times 101 = 2222$

7. $\because$ LCM × HCF = Ist no. × IInd no.

$1160 \times 29 = 290 \times$ IInd no.

$$\frac{1160 \times 29}{290} = \text{IInd no.}$$

$116 = $ IInd no.

2	1111, 2222
11	1111, 1111
101	101, 101
	1, 1

Multiple Choice Questions

1. (c) 10 **2.** (c) (5, 7) **3.** (c) 4 **4.** (b) 7645 **5.** (c) 4 **6.** (b) (3, 5, 7) **7.** (b) 1 **8.** (c) Product
9. (b) 1 and the number if self **10.** (b) False **11.** (c) 2