

Exercise 1.1

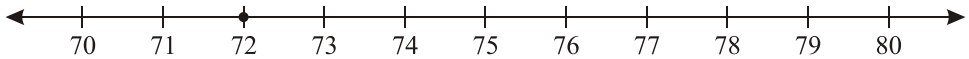
1. (a) 65,00,322 (b) 900,01,030
(c) 2,000,365,728 (d) 425,716,402
2. (a) 6,87,54,329 → Six crore eighty-seven lakh fifty-four thousand three hundred twenty-nine
(b) 7,39,87,021 → Seven crore thirty-nine lakh eighty seven thousand twenty-one
(c) 9,37,54,081 → Nine crore thirty-seven lakh fifty-four thousand eighty-one
(d) 2,60,00786 → Two crore sixty lakh seven hundred eighty-six.
3. (a) 98,765,434 → Ninety-eight million seven hundred sixty five thousand four hundred thirty-four.
(b) 76,382,949 → Seventy-six-million three hundred eighty-two thousand Nine hundred forty-nine.
(c) 45,654,670 → Forty five million six hundred fifty-four six hundred seventy.
(d) 14,367,856,792 → Fourteen billion three hundred sixty seven million eight hundred fifty-six thousand seven hundred ninety-two.
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) $45,73,910 = 4 \times 10,00,000 + 5 \times 1,00,000 + 7 \times 10,000 + 3 \times 1000 + 9 \times 100 + 1 \times 10 + 0$
(d) $2,34,56,410 = 2 \times 100,00,000 + 3 \times 10,00,000 + 4 \times 1,00,000 + 5 \times 10,000 + 6 \times 1000 + 4 \times 100 + 1 \times 10 + 0 \times 1$
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 → 27,09,835
Smallest → 7,63,048
(b) Greatest → 3,68,92,173
Smallest → 12,37,689

11. (a) Greatest \rightarrow 97,54,321 and Smallest \rightarrow 12,34,579
 (b) Greatest \rightarrow 86,54,210 and Smallest \rightarrow 10,24,568

Exercise 1.2

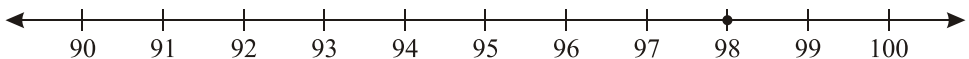
1. (a) 72

Round off 72 to the nearest ten.



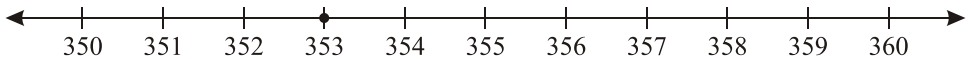
If take a number say 72, than it is nearer to 70 we will round off 72 to the Nearest ten as 70.

- (b) Round off 98 to the Nearest ten.



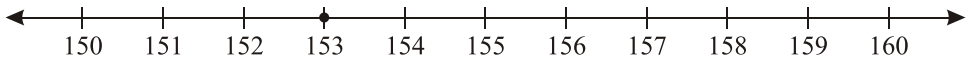
if take a number say 98 then it is nearer to 100
 So, we will round off 98 to the Nearest ten as 100

- (c) Round off 353 to the Nearest ten.



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

- (d) Round off 154 to the Nearest ten



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

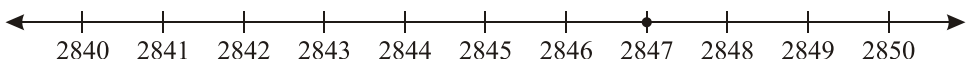
- (e) Round off 3425 to the Nearest ten.



\therefore 3425 is closer to 3430 then to 3420

So, 3425 is rounded off to 3430.

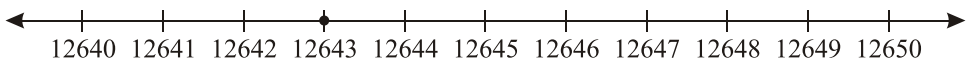
- (f) Round off 2847 to the Nearest ten.



\therefore 2847 is closer to 2850 then to 2840.

So, 2847 is rounded off to 2850.

- (g) Round off 12643 to the nearest ten.

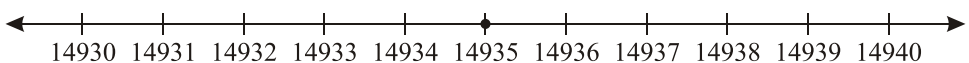


\therefore 12643 is closer to 12640 then to 12650.

So, 12643 is rounded off to 12640.

- (h) 14935

Round off 14935 to the Nearest ten.



\therefore 14935 is closer to 14940 than to 14930.
So, 14935 is rounded off to 14940.

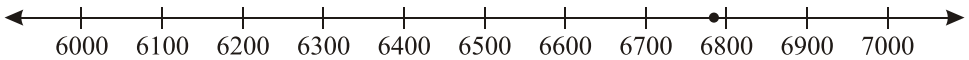
2. (a) Round off 895 to the Nearest hundred.



895 is closer to 900 than to 800, so, 895 is rounded off to 900.

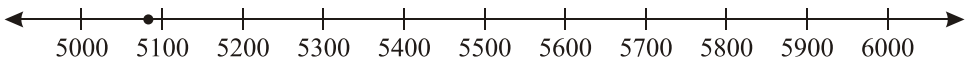
- (b) 6749

Round off 6794 to the Nearest hundred.



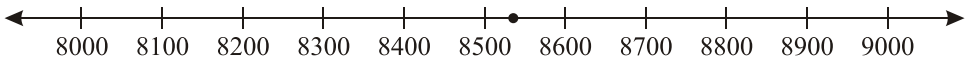
\therefore 6794 is closer to 6800 than to 6700.
So, 6794 is rounded off to 6800.

- (c) Round off 5079 to the Nearest hundred.



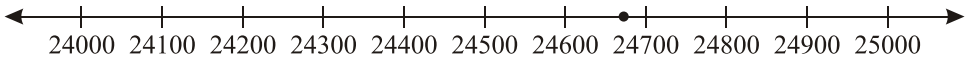
\therefore 5079 is closer to 5100 than to 5000.
So, 5079 is rounded off to 5100

- (d) Round off 80541 to the Nearest hundred.



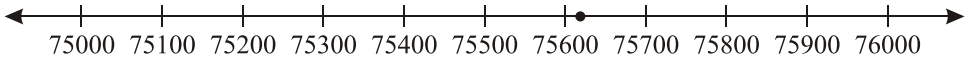
\therefore 80541 is closer to 80500 than to 80,600
So, 80,541 is rounded off to 80,500.

- (e) Round off 24693 to the nearest hundred.



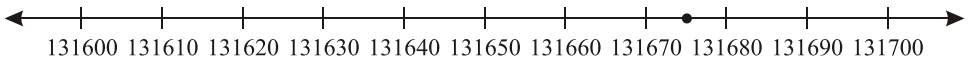
\therefore 24693 is closer to 24700 than to 24600.
So, 24693 is rounded off to 24700,

- (f) Round off 75617 to the Nearest hundred.



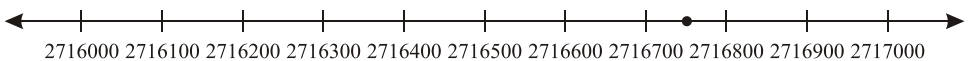
\therefore 75617 is closer to 75600 than to 75700.
So, 75617 is rounded off to 75600.

- (g) Round off 131675 to the nearest hundred.



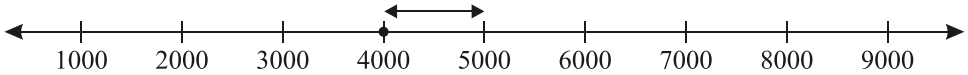
\therefore 131675 is closer to 1,31,700 than to 1,31,600
So, 1,31,675 is rounded off to 1,31,700

- (h) Round off 2716978 to the nearest hundred.



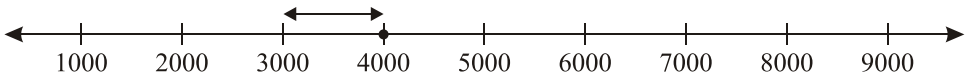
\therefore 2716978 is closer to, 27,17,000 than to 27,16,900.
So, 2716978 is rounded off to 27,17,000

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



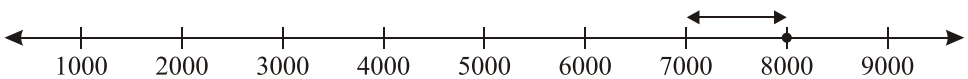
\therefore 4499 is closer to 4000 than to 5000.
So, 4499 is rounded off to 4000.

(b) Rounded off 3764 to the Nearest thousand.



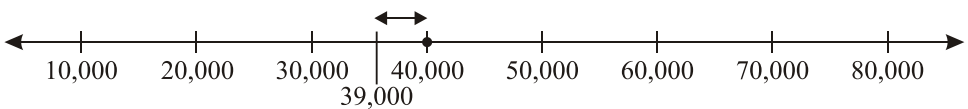
\therefore 3764 is closer to 4000 than to 3000.
So, 3764 is rounded off to 4000.

(c) Rounded of 7951 to the Nearest thousand.



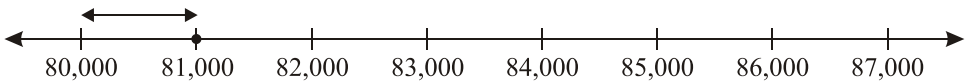
\therefore 7951 is closer to 8000 than to 6000.
So, 7951 is rounded off to 8000.

(d) Rounded off 39357 to the Nearest thousand.



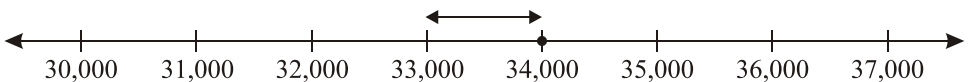
\therefore 39357 is closer to 40,000 than to 38000.
So, 39357 is rounded of to 40,000.

(e) Rounded off 80502 to the nearest thousand.



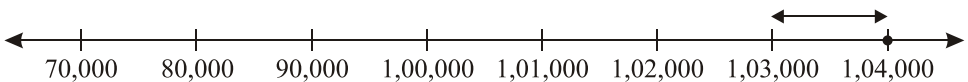
\therefore 80502 is closer to 81,000 than to 80,000.
So, 80502 is rounded off to 81,000

(f) Rounded off 34414 to the nearest thousand.



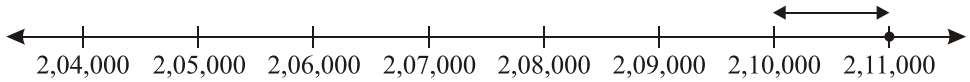
\therefore 34414 is closer to 34,000 than to 35000.
So, 34414 is rounded off to 34000.

(g) Rounded off 10,3789 to the Nearest thousand.



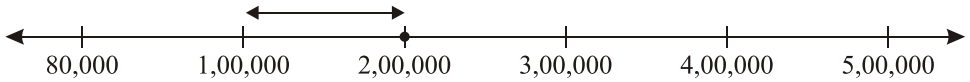
\therefore 10,3,789 is closer to 1,040,00 than to 1,030,00.
So, 10,3,789 is rounded off to 1,04,000.

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



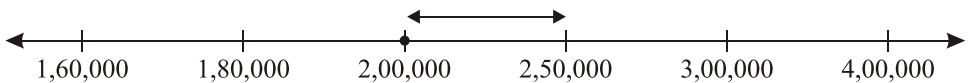
\therefore 2,10,357 is closer to 2,10,000 than to 2,11,000
So, 2,10,357 is rounded off to, 2,10,000.

4. (a) Rounded off 1,65,203 to the Nearest lakh.



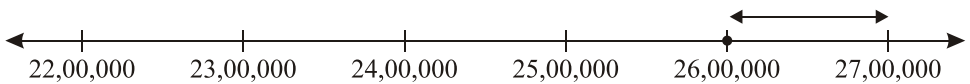
\therefore 1,65,203 is closer to 2,00,000 than to 1,00,000
So, 1,65,203 is rounded off to 2,00,000

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



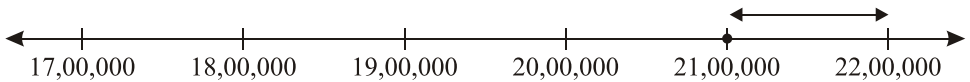
\therefore 2,54,305 is closer to 3,00,000 than to 2,00,000.
So, 2,54,305 is rounded off to 3,00,000.

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



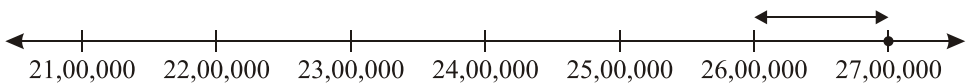
\therefore 26,39,215 is closer to 26,00,000 than to 27,00,000.
So, 26,39,215 is rounded off to 26,00,000.

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



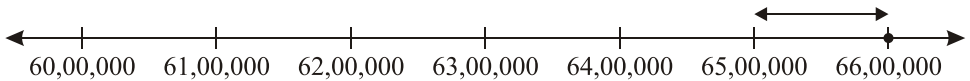
\therefore 20,07,909 is closer to 20,00,000 than to 21,00,000.
So, 20,07,909 is rounded off to 20,00,000.

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



\therefore 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.



\therefore 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.

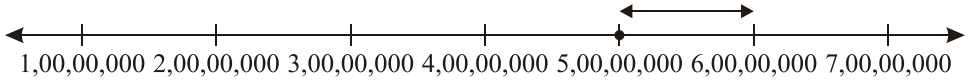
(g) Rounded off 16,51,243 to the Nearest lakh.



∴ 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.



∴ 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	(b)	77 estimated as =	80
	41 estimated as = +	40		43 estimated as = +	40
	estimated sum =	<u>110</u>		estimated sum =	<u>120</u>

(c)	882 estimated as =	880	(d)	567 estimated as =	570
	729 estimated as = +	730		432 estimated as = +	430
	estimated sum =	<u>1610</u>		estimated sum =	<u>1000</u>

2. (a)	369 estimated as =	400	(b)	872 estimated as =	900
	563 estimated as = +	600		560 estimated as = +	600
	estimated sum =	<u>1000</u>		estimated sum =	<u>1500</u>

(c)	854 estimated as =	900	(d)	5,137 estimated as =	5100
	761 estimated as = +	800		7,652 estimated as = +	7700
	estimated sum =	<u>1700</u>		estimated sum =	<u>12,800</u>

3. (a)	68 estimated as =	70	(b)	689 estimated as =	690
	42 estimated as = -	40		432 estimated as = -	430
	estimated sum =	<u>30</u>		estimated sum =	<u>260</u>

(c)	564 estimated as =	560	(d)	856 estimated as =	860
	321 estimated as = -	320		672 estimated as = -	6700
	estimated sum =	<u>240</u>		estimated sum =	<u>190</u>

4. (a)	674 estimated as =	700	(b)	689 estimated as =	700
	432 estimated as =	400		532 estimated as = -	400
	estimated sum = -	<u>300</u>		estimated sum =	<u>200</u>

(c)	764 estimated as =	800	(d)	956 estimated as =	1000
	321 estimated as = -	300		572 estimated as = -	600
	estimated sum =	<u>500</u>		estimated sum =	<u>400</u>

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 = $\frac{600}{20} = 30$
- (b) 861 estimated as = 900
29 estimated as = 30
estimated product is = $\frac{900}{30} = 30$
- (c) 347 estimated as = 300
13 estimated as = 10
estimated product is = $\frac{300}{10} = 30$
- (d) 961 estimated as = 700
estimated as = 20
estimated product is = $\frac{700}{20} = 35$

$$\begin{array}{r}
 9. \quad 1712 \text{ coins is estimated as} = 1700 \\
 1238 \text{ coins is estimated as} = + 1200 \\
 \hline
 \text{total estimated coins} = 2900
 \end{array}$$

10. Sugar sold in 8 days = $48 \times 8 = 384$
 estimated sugar sold = 400 kg
 estimated sugar had = 600 kg
 estimated sugar left = $(600 - 400) \text{ kg} = 200 \text{ kg}$

Exercise 1.4

1. Number

- (a) 24 \longrightarrow
 (b) 45 \longrightarrow
 (c) 152 \longrightarrow
 (d) 1236 \longrightarrow
 (e) 356 \longrightarrow
 (f) 774 \longrightarrow
 (g) 888 \longrightarrow
 (h) 2090 \longrightarrow

Roman Number

- XXIV
 SLV
 CLII
 MCCXXXVI
 CCCLVI
 DCCLXXIV
 DCCCLXXXVIII
 MMXC

2. Roman

- (a) XIX \longrightarrow
 (b) XCVII \longrightarrow
 (c) CDLXV \longrightarrow
 (d) CLXXI \longrightarrow
 (e) MDCLIV \longrightarrow
 (f) CCXLIX \longrightarrow
 (g) MCDXII \longrightarrow
 (h) CCXCII \longrightarrow

Number Number

- 19
 97
 465
 171
 1654
 249
 1412
 292

3. (a) LVII = 57 meaningful

(c) CLXXXX = Meaningless

(e) MVXV = Meaningless

(b) VXVIII = Meaningless

(d) CCLXIV = 264 Meaningful

(f) LLL = Meaningless

4. (a) LV > XL

(c) LXXI > XLIX

(e) XC > XL

(b) CCC < D

(d) XLIV < LXIV

(f) CMXIX < MCXIX

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

$$= 35 + 40 = 75$$

$$= \text{LXXV}$$

- (b) LIX + XI = $59 + 11 = 70$

$$= \text{LXX}$$

- (c) XL + XXX = $40 + 30 = 70$

$$= \text{LXX}$$

- (d) L - XXXIX = $50 - 39 = 11$

$$= \text{XI}$$

- (e) XCII - LXV = $92 - 65 = 27$

$$= \text{XXVII}$$

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

$$= \text{MDCXI}$$

Multiple Choice Questions

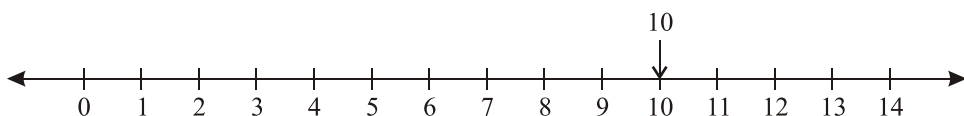
1. (d) 495 2. (c) 1023 3. (b) 6,00,000 4. (a) 5 5. (a) 2,00,000 6. (a) 100 7. (b) 1240
8. (c) 1900 9. (a) CDXVI 10. (a) 162

2

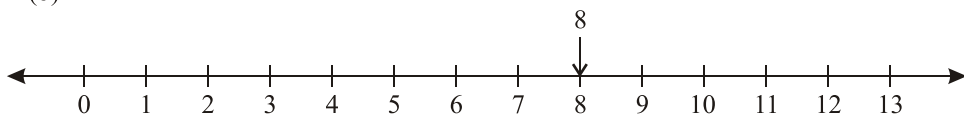
Whole Numbers

Exercise 2.1

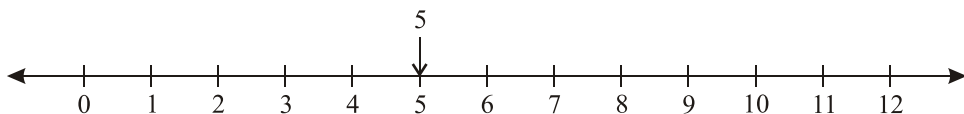
1. 0 (zero) is the smallest whole number.
2. No
3. (a) The successor of 351070 = $(351070 + 1) = 351071$
(b) The successor of 900209 = $(900209 + 1) = 900210$
(c) The successor of 526703 = $(526703 + 1) = 526704$
(d) The successor of ten lakh (10,00,000) = $(10,00,000 + 1) = 10,00,001$
4. (a) The predecessor 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) = $(10,00,000 - 1) = 9,99,999$
5. (a) The following number line represents 9 whole number line on which whole numbers are represented.



(b)



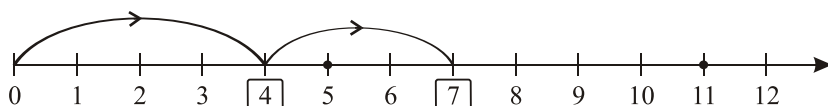
(c)



(d)

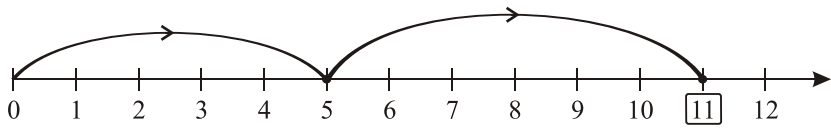


6. (a) $4 + 3$



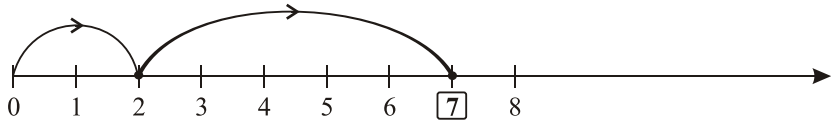
$\therefore 4 + 3 = 7$

(b) $5 + 6$



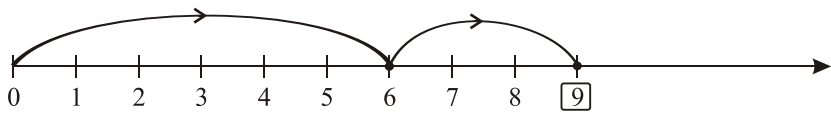
$\therefore 5 + 6 = 11$

(c) $2 + 5$



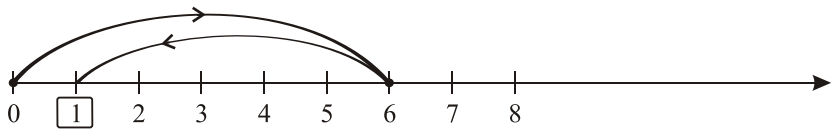
$\therefore 2 + 5 = 7$

(d) $6 + 3$



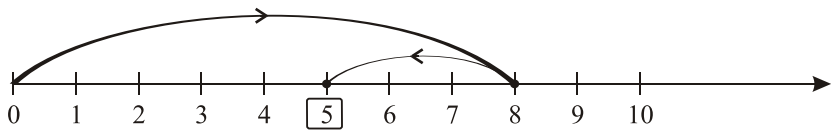
$\therefore 6 + 3 = 9$

(e) $6 - 5$



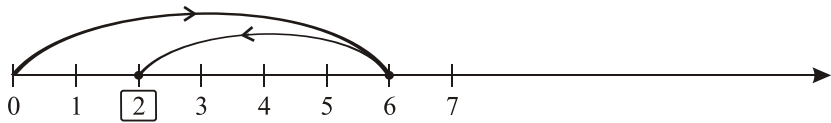
$\therefore 6 - 5 = 1$

(f) $8 - 3$



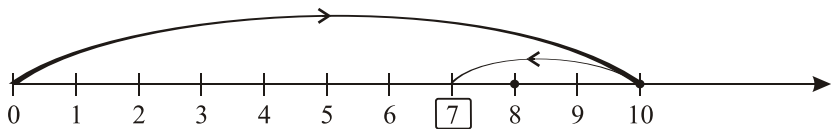
$\therefore 8 - 3 = 5$

(g) $6 - 4$



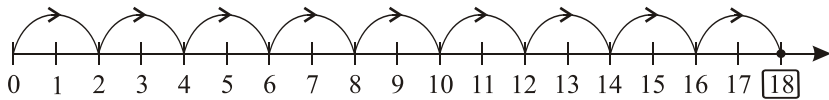
$\therefore 6 - 4 = 2$

(h) $10 - 3$



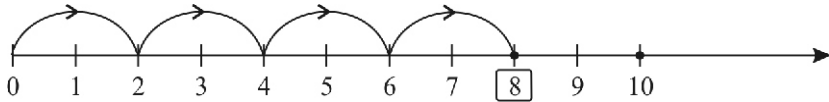
$\therefore 10 - 3 = 7$

(i) 2×9



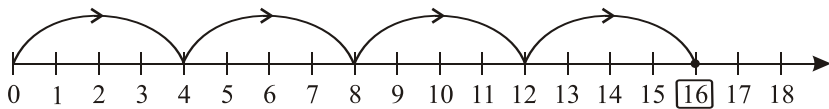
$\therefore 2 \times 9 = 18$

(j) 2×4



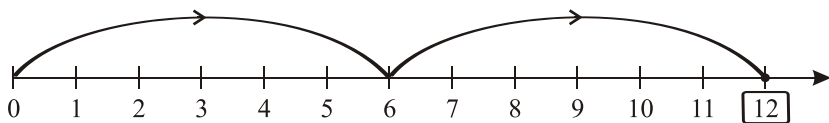
$\therefore 2 \times 4 = 8$

(k) 4×4



$\therefore 4 \times 4 = 16$

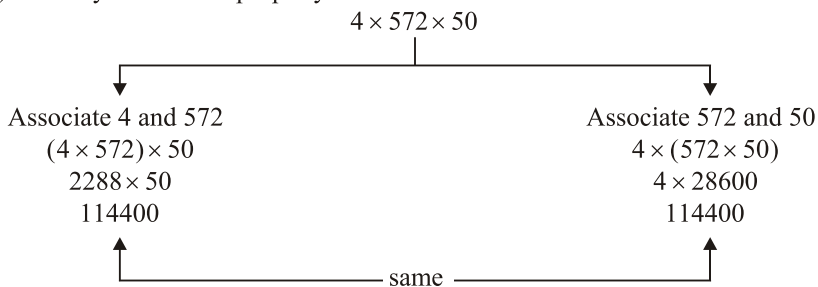
(l) 6×2



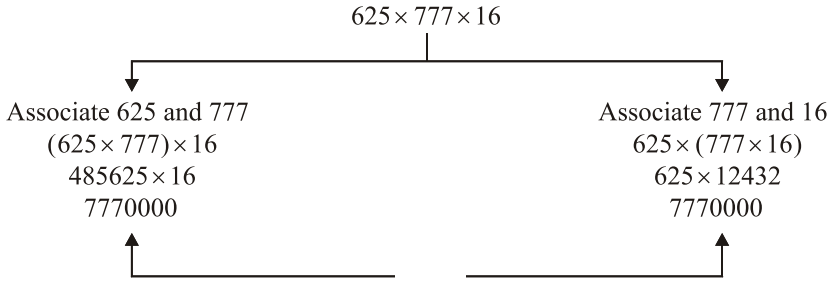
$\therefore 6 \times 2 = 12$

Exercise 2.2

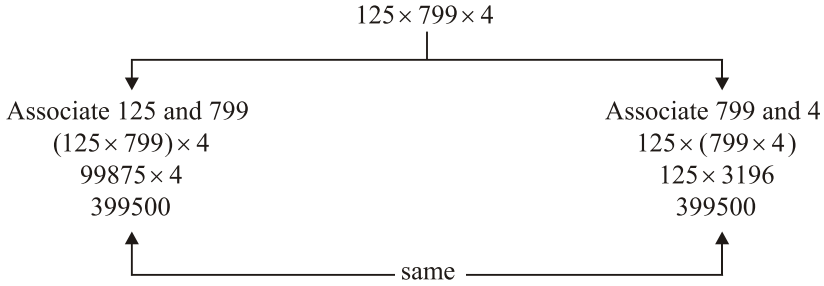
1. (a) $7 \times 0 = 0 = 0 \times 7$ (b) $1275 \div 1 = 1275$
 (c) $195 \times 505 = 405 \times 195$ (d) $0 + 515 = 515$
 (e) $5 + (105 + 2) = (5 + 105) + 2$ (f) $128 \times (100 - 2) = 128 \times 100 - 128 \times 2$
 (g) $5 \times 92 \times 20 = 5 \times 20 \times 92$ (h) $751 \div 751 = 1$
2. (a) $79 + 122 + 378 + 521 = 1100$
 (b) $234 + 266 + 508 = 1008$
 (c) $95 + 104 + 196 + 205 = 600$
3. (a) Use by associative property



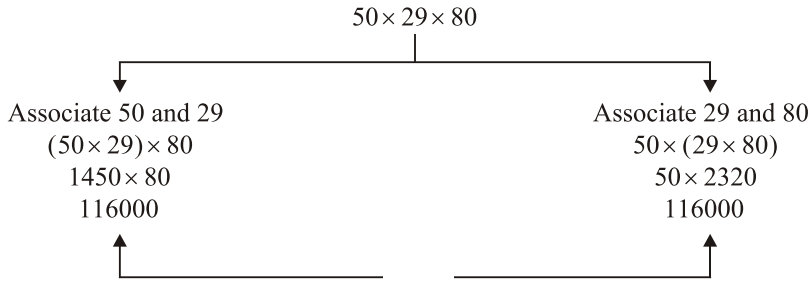
(b) Use by associative property



(c) Use by associative property



(d) Use by associative property



4. (a) $952 \times 15 - 5 \times 952$

$$\begin{aligned} &= 952 \times (15 - 5) && \text{(by distributive law)} \\ &= 952 \times 10 \\ &= 9520 \end{aligned}$$

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

$$\begin{aligned} &= 1008(8 + 92) && \text{(by distributive law)} \\ &= 1008 \times 100 \\ &= 100800 \end{aligned}$$

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

$$\begin{aligned} \Rightarrow & 562 \times 4 \times 80 + 281 \times 204 \times 2 \times 4 \\ \Rightarrow & 562 \times 4 \times 80 + 562 \times 80 \times 4 \\ \Rightarrow & 562 \times 4 \times 80(1 + 1) && \text{(by distributive law)} \\ \Rightarrow & 179840 \times 2 = 359680 \end{aligned}$$

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

$$\begin{aligned} \Rightarrow & 697 \times 25 \times 282 + 697 \times 5 \times 5 \times 718 \\ &= 697 \times 25(282 + 718) && \text{(by distributive law)} \\ &= 17425 \times 1000 \\ &= 17425000 \end{aligned}$$

5. (a) To prove

$$\begin{array}{lcl} & (3+5)+7 & = 3+(5+7) \\ \text{LHS} & (3+5)+7 & \text{RHS } 3+(5+7) \\ & 8+7 & = 3+12 \\ & 15 & = 15 \end{array}$$

$$\therefore (3+5)+7=3+(5+7)$$

(b) To prove

$$\begin{array}{lcl} & (2+4)+6 & = 2+(4+6) \\ \text{LHS} & (2+4)+6 & \text{RHS } 2+(4+6) \\ & 6+6 & 2+0 \\ & 12 & = 12 \end{array}$$

$$\therefore (2+4)+6=2+(4+6)$$

6.

$$\begin{array}{lcl} \text{LHS} & & \text{RHS} \\ a-b & & b-a \\ 10-6 & & 6-10 \\ 4 & \neq & -4 \end{array}$$

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

7.

$$\begin{array}{lcl} \text{LHS} & & \text{RHS} \\ a-b & & b-a \\ 256-175 & & 175-256 \end{array}$$

$$81 \neq -81$$

8.

$$\begin{array}{lcl} \text{LHS} & & \text{RHS} \\ a-(b-c) & & (a-b)-c \\ 12-(8-5) & & (12-8)-5 \\ 12-3 & \neq & 4-5 \\ 9 & \neq & -1 \end{array}$$

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

9.

$$\begin{array}{lcl} \text{LHS} & & \text{RHS} \\ a-(b-c) & & (a-b)-c \\ 256-(362-182) & & (256-362)-182 \\ 256-180 & & -106-182 \\ 76 & \neq & -288 \end{array}$$

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

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	$b \div a$
	$= 84 \div 4$		$= 4 \div 84$
	$= 21$		$= \frac{4}{84} = \frac{1}{21}$

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

14. (i) $456 \div 17$

\therefore dividend = 456; divisor = 17

Quotient = 26

remainder = 14

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

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

$$456 = 442 + 14$$

$$456 = 456 \text{ verified}$$

$$\begin{array}{r} 17 \overline{) 456} \quad (26 \\ \underline{-34} \\ 116 \\ \underline{-102} \\ 14 \end{array}$$

- (ii) $259 \div 13$

\therefore Dividend = 259

Quotient = 19

Divisor = 13

Remainder = 12

To verify Dividend = Divisor \times Quotient + remainder

$$259 = 13 \times 19 + 12$$

$$259 = 247 + 12$$

$$259 = 259 \text{ verified}$$

$$\begin{array}{r} 19 \overline{) 259} \quad (13 \\ \underline{-19} \\ 69 \\ \underline{-57} \\ 12 \end{array}$$

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

If $a \div b = c$

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

\therefore

$$\begin{aligned} b \times c &= a \\ 7 \times 8 &= 56 \\ 56 &= 56 \end{aligned}$$

verified

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

If $a \div b = c$

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

\therefore

$$\begin{aligned} b \times c &= a \\ 13 \times 12 &= 156 \\ 156 &= 156 \end{aligned}$$

verified

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

If $a \div b = c$

$187 \div 11 = c$

\therefore

$$\begin{aligned} b \times c &= a \\ 11 \times 17 &= 187 \\ 187 &= 187 \end{aligned}$$

verified

16. Largest 5 digit number = 99999

Smallest 3 digit number = 100

difference = $(99999 - 100) = 99899$

17. One bed sheets rate = ₹ 350














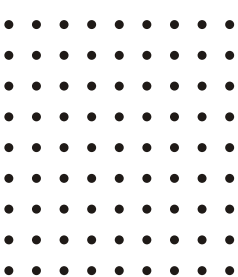
\therefore 7 bed sheets rate = $350 \times 7 = 2450$

again,

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) $6 =$  or 
- (b) $10 =$  or 
- (c) $12 =$  or  or  or 
- (d) $14 =$  or 
3. (a) $4 =$ 
- (b) $9 =$ 
- (c) $16 =$ 
- (d) $81 =$ 

4. (a) 6



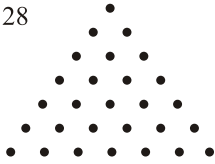
(b) 10



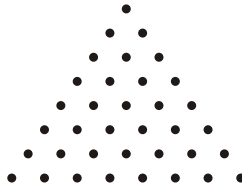
(c) 21



(d) 28



(e) 36



5. (a) $436 + 999$

$$= 436 + 1000 - 1$$

$$= 1436 - 1 = 1435$$

(c) $829 + 999$

$$= 829 + 1000 - 1$$

$$= 1829 - 1 = 1828$$

(e) $1892 - 99$

$$= 1892 - 100 + 1$$

$$= 1792 + 1 = 1793$$

(g) 62939×9

$$= 629390 \times (10 - 1)$$

$$= 629390 - 62939 = 566451$$

(b) $526 + 99$

$$= 526 + 100 - 1$$

$$= 626 - 1 = 625$$

(d) $1256 - 999$

$$= 1256 - 1000 + 1$$

$$= 256 + 1 = 257$$

(f) 1256×99

$$= 1256 \times (100 - 1)$$

$$= 125600 - 1256 = 124344$$

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) $18 \div 02$. (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 = $9999 \times 10 = 999909$. (a) 10 10. (c) 999

3

Playing with Numbers

Exercise 3.1

1. (a) $36 = 1 \times 36$

$$36 = 2 \times 18$$

$$36 = 3 \times 12$$

$$36 = 4 \times 9$$

$$36 = 6 \times 6$$

\therefore Factors of 36 are $-1, 2, 3, 4, 6, 9, 12, 18, 36$

- (b) $75 = 1 \times 75$
 $75 = 3 \times 25$
 $75 = 5 \times 15$
 \therefore Factors of 75 are 1, 3, 5, 15, 25, 75
- (c) $120 = 1 \times 120$
 $120 = 2 \times 60$
 $120 = 3 \times 40$
 $120 = 4 \times 30$
 $120 = 5 \times 24$
 $120 = 6 \times 20$
 $120 = 8 \times 15$
 $120 = 10 \times 12$
 \therefore 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 \therefore HCF of 18 and 35 = 1
 (b) 27, 36 are not co-prime \therefore HCF of 27 and 36 is not 1
 (c) 10, 21 are co-prime \therefore 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

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

(g) 54795	X	X	X	✓	X
(h) 726352	✓	✓	✓	X	X
(i) 639210	✓	X	X	✓	✓
(j) 297144	✓	✓	✓	X	X

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

- 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
 \therefore 28 is divisible by 14 also
- 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
- 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
 \therefore 2430780 is not divisible by 7
- If a number divisible by both 5 and 12
 \therefore 60 is the other number by which that number is always divisible
- 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

- (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 10, 25 are 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
 \therefore 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.

\therefore 25 and 105 are not co-prime.

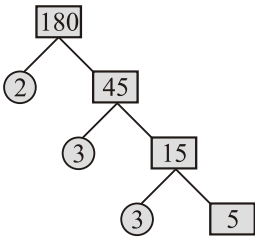
6. Factor of 5 = 5, 10, 15, 20, 25, 30, 35, ④0, 45, 50

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

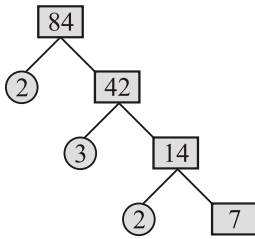
40 number will be always divisible 5 and 8.

Exercise 3.4

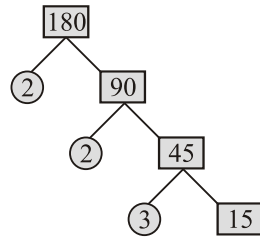
1. Factor free method



$\therefore 90 = 2 \times 3 \times 3 \times 5$



$\therefore 84 = 2 \times 3 \times 2 \times 7$



$\therefore 180 = 2 \times 2 \times 3 \times 15$

2. (a)

2	24
2	12
2	6
2	3
	1

$\therefore 24 = 2 \times 2 \times 2 \times 3$

(d)

3	81
3	27
3	9
3	3
	1

$\therefore 81 = 3 \times 3 \times 3 \times 3$

(b)

2	28
2	14
7	7
	1

$\therefore 28 = 2 \times 2 \times 7$

(e)

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

$\therefore 96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$

(c)

2	36
2	18
3	9
3	3
	1

$\therefore 36 = 2 \times 2 \times 3 \times 3$

(f)

2	36
2	18
2	9
3	3
5	5
	1

$\therefore 120 = 2 \times 2 \times 2 \times 3 \times 5$

(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 = $2 \times 7 = 14$

(c)

3	39
13	13
	1

2	52
2	26
13	13
	1

Prime factors of 39 = 3×13

Prime factors of 52 = $2 \times 2 \times 13$

HCF of 39 and 52 = 13

(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

(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 = $2 \times 2 \times 2 \times 3 = 24$

(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 = 7×11

HCF of 44 and 77 = 11

(f)

3	69
23	23
	1

23	253
11	11
	1

Prime factors of 69 = 3×23

Prime factors of 253 = 11×23

HCF of 69 and 253 = 23

$$\begin{array}{r}
 2. \quad (a) \quad 390 \overline{) 520} \quad (1 \\
 \underline{-390} \\
 130 \overline{) 390} \quad (3 \\
 \underline{-390} \\
 \hline
 \times
 \end{array}$$

\therefore HCF of 390 and 520 is 130

$$\begin{array}{r}
 (b) \quad 10549 \overline{) 13563} \quad (1 \\
 \underline{-10549} \\
 3014 \overline{) 10549} \quad (3 \\
 \underline{-9042} \\
 1507 \overline{) 3014} \quad (2 \\
 \underline{-3014} \\
 \hline
 0
 \end{array}$$

\therefore HCF of 10549 and 13563 = 1507

$$\begin{array}{r}
 (c) \quad 2628 \overline{) 8541} \quad (3 \\
 \underline{-7884} \\
 657 \overline{) 2628} \quad (4 \\
 \underline{-2628} \\
 \hline
 0
 \end{array}$$

\therefore HCF of 2628 and 8541 is 657

$$\begin{array}{r}
 (d) \quad 1197 \overline{) 1311} \quad (1 \\
 \underline{-1197} \\
 114 \overline{) 1197} \quad (10 \\
 \underline{-1140} \\
 57 \overline{) 114} \quad (2 \\
 \underline{-114} \\
 \hline
 0
 \end{array}$$

\therefore HCF of 1197 and 1311 is 57

Now HCF of 57 and 627

\therefore HCF of 1197, 1311 and 627 is 57

$$\begin{array}{r}
 57 \overline{) 627} \quad (1 \\
 \underline{-57} \\
 57 \\
 \underline{-57} \\
 \hline
 0
 \end{array}$$

$$3. \quad (a) \quad \frac{348}{1024}$$

\therefore HCF of 348 and 1024 = 4

$$\therefore \quad \frac{348 \div 4}{1024 \div 4} = \frac{87}{256}$$

$$\begin{array}{r}
 348 \overline{) 1024} \quad (2 \\
 \underline{-696} \\
 328 \overline{) 348} \quad (1 \\
 \underline{-328} \\
 20 \overline{) 328} \quad (1 \\
 \underline{-20} \\
 128 \\
 \underline{-120} \\
 8 \overline{) 20} \quad (2 \\
 \underline{-16} \\
 4 \overline{) 8} \quad (2 \\
 \underline{-8} \\
 \hline
 \times
 \end{array}$$

$$(b) \quad \frac{744}{1023}$$

\therefore HCF of 744 and 1023 = 93

$$\therefore \quad \frac{744 \div 93}{1023 \div 93} = \frac{8}{11}$$

$$\begin{array}{r}
 744 \overline{) 1023} \quad (1 \\
 \underline{-744} \\
 279 \overline{) 744} \quad (2 \\
 \underline{-558} \\
 186 \overline{) 279} \quad (1 \\
 \underline{-186} \\
 93 \overline{) 186} \quad (2 \\
 \underline{-186} \\
 \hline
 \times
 \end{array}$$

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

∴ HCF of 625 and 3125 is 625

$$\therefore \frac{625 \div 625}{3125 \div 625} = \frac{1}{5}$$

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

∴ HCF of 117 and 270 is 9

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

$$\begin{array}{r} 625 \overline{) 3125} \left(1258 \\ \underline{-3125} \\ \hline \end{array}$$

$$\begin{array}{r} 177 \overline{) 270} \left(2 \\ \underline{-234} \\ \hline 36 \overline{) 117} \left(3 \\ \underline{-108} \\ \hline 9 \overline{) 36} \left(4 \\ \underline{-36} \\ \hline 0 \end{array}$$

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

∴ 69 is the largest number that divides 348 and 626 leaving remainders 3 and 5 respectively

$$\begin{array}{r} 345 \overline{) 621} \left(1 \\ \underline{-345} \\ \hline 276 \overline{) 345} \left(1 \\ \underline{-276} \\ \hline 69 \overline{) 276} \left(4 \\ \underline{-276} \\ \hline 0 \end{array}$$

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

Now HCF of 35 and 525

$$\begin{array}{r} 35 \overline{) 525} \left(1258 \\ \underline{35} \\ 175 \\ \underline{-175} \\ \hline 0 \end{array}$$

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

∴ HCF of 280, 385 and 525 is 35

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

$$\begin{array}{r} 391 \overline{) 425} \left(1 \\ \underline{-391} \\ \hline 34 \overline{) 391} \left(11 \\ \underline{-34} \\ 51 \\ \underline{-34} \\ \hline 17 \overline{) 34} \left(2 \\ \underline{34} \\ \hline 0 \end{array}$$

∴ 17 is the largest number that divides 398, 436, and 542 respectively
HCF of 391, 425, 527 is 17.

$$\begin{array}{r} 280 \overline{) 385} \left(1 \\ \underline{-280} \\ \hline 105 \overline{) 280} \left(2 \\ \underline{-210} \\ \hline 70 \overline{) 105} \left(1 \\ \underline{-70} \\ \hline 35 \overline{) 70} \left(2 \\ \underline{-70} \\ \hline 0 \end{array}$$

$$\begin{array}{r} 17 \overline{) 527} \left(31 \\ \underline{-51} \\ 17 \\ \underline{-17} \\ \hline 0 \end{array}$$

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

$$\begin{array}{r}
 189 \overline{) 224} \quad 1 \\
 \underline{-189} \\
 35 \overline{) 189} \quad 5 \\
 \underline{-175} \\
 14 \overline{) 35} \quad 2 \\
 \underline{-28} \\
 7 \overline{) 14} \quad 2 \\
 \underline{-14} \\
 0
 \end{array}$$

- HCF of 224 and 189 is 7
 \therefore HCF of 22.4 and 18.9 is 70
 \therefore The largest square tile 70 cm of laid.

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

$$\begin{array}{r}
 403 \overline{) 434} \quad 1 \\
 \underline{-403} \\
 31 \overline{) 403} \quad 13 \\
 \underline{-31} \\
 0
 \end{array}
 \qquad
 \begin{array}{r}
 31 \overline{) 465} \quad 15 \\
 \underline{-31} \\
 155 \\
 \underline{-155} \\
 0
 \end{array}$$

Hence the maximum capacity of a container is 31 litres.

9. The largest rod of the measure of will be the HCF of 9.76 m, 7.93 m and 1.83

- \therefore 9.76 multiply of 100 = 976 cm
 7.93 multiply of 100 = 793 cm
 1.83 multiply of 100 = 183 cm

Then HCF of 976, 793 and 183

$$\begin{array}{r}
 183 \overline{) 793} \quad 4 \\
 \underline{-732} \\
 61 \overline{) 183} \quad 3 \\
 \underline{-183} \\
 0
 \end{array}
 \qquad
 \begin{array}{r}
 61 \overline{) 976} \quad 16 \\
 \underline{-61} \\
 366 \\
 \underline{-366} \\
 0
 \end{array}$$

- \therefore HCF of 976, 793 and 183 and = 61 cm
 \therefore The longest rod of measure 61 cm.

Exercise 3.6

1. (a) 8, 20

$$\begin{array}{r|l}
 2 & 8 \\
 \hline
 2 & 4 \\
 \hline
 2 & 2 \\
 \hline
 & 1
 \end{array}
 \qquad
 \begin{array}{r|l}
 2 & 20 \\
 \hline
 2 & 10 \\
 \hline
 5 & 5 \\
 \hline
 & 1
 \end{array}$$

The prime factors of 8 = $2 \times 2 \times 2$

The prime factor of 20 = $2 \times 2 \times 5$

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

(b) 20, 32

$$\text{The prime factors of 20} = 2 \times 2 \times 5$$

$$\text{The prime factor of 32} = 2 \times 2 \times 2 \times 2 \times 2$$

$$\begin{aligned}\text{L.C.M.} &= 2 \times 2 \times 5 \times 2 \times 2 \times 2 \\ &= 32 \times 5 \\ &= 160\end{aligned}$$

(c) 40, 50

$$\text{The prime factors of 40} = 2 \times 2 \times 2 \times 5$$

$$\text{The prime factors of 50} = 2 \times 5 \times 5$$

$$\begin{aligned}\text{L.C.M.} &= 2 \times 5 \times 2 \times 2 \times 5 \\ &= 8 \times 25 \\ &= 200\end{aligned}$$

(d) The prime factors of 30 = 2 × 3 × 5

$$\text{The prime factors of 36} = 2 \times 2 \times 3 \times 3$$

$$\text{The prime factors of 40} = 2 \times 2 \times 2 \times 5$$

$$\begin{aligned}\text{L.C.M.} &= 2 \times 2 \times 3 \times 5 \times 3 \times 2 \\ &= 8 \times 9 \times 5 \\ &= 40 \times 9 \\ &= 360\end{aligned}$$

(e) The prime factors of 12 = 2 × 2 × 3

$$\text{The prime factors of 20} = 2 \times 2 \times 5$$

$$\text{The prime factors of 24} = 2 \times 2 \times 2 \times 3$$

$$\begin{aligned}\text{L.C.M.} &= 2 \times 2 \times 3 \times 5 \times 2 \\ &= 8 \times 15 \\ &= 120\end{aligned}$$

(f) The prime factors of 8 = 2 × 2 × 2

$$\text{The prime factors of 10} = 2 \times 5$$

$$\text{The prime factors of 12} = 2 \times 2 \times 3$$

$$\begin{aligned}\text{L.C.M.} &= 2 \times 2 \times 2 \times 5 \times 3 \\ &= 8 \times 15 \\ &= 120\end{aligned}$$

2. (a)

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

$$\begin{aligned}\text{L.C.M of 60, 75} &= 2 \times 2 \times 3 \times 5 \times 5 \\ &= 60 \times 5 \\ &= 300\end{aligned}$$

(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

$$\begin{aligned}\text{L.C.M of 48, 60, 80} &= 2 \times 2 \times 2 \times 2 \times 3 \times 5 \\ &= 48 \times 5 \\ &= 240\end{aligned}$$

(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

\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 $2 \times 2 \times 2 \times 2 \times 2 \times 3$
 $= 96$ seconds

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

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

∴ 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 $= (2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 7) + 5$
 $= (32 \times 21) + 5$
 $= 672 + 5 = 677$ 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

∴ 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. \therefore LCM \times HCF = Product of numbers

\therefore LCM \times 24 = 4800

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

2. \therefore LCM \times HCF = Ist no. \times IInd no.

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

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

$238 = \text{IInd no.}$

3. \therefore LCM \times HCF = Product of numbers

\therefore 782 \times HCF = 1564

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

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 \times LCM

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

5. \therefore 17 is not the factor of 999

\therefore If HCF = 17

then LCM cannot be 999

$$\begin{array}{r} 17 \overline{) 999} \quad (58 \\ \underline{85} \\ 149 \\ \underline{136} \\ 13 \end{array}$$

6. \therefore $1111 \overline{) 2222} \quad (2$

$\underline{2222}$

$\underline{0}$

\therefore HCF = 1111

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

7. \therefore LCM \times HCF = Ist no. \times IInd no.

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

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

$116 = \text{IInd no.}$

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