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Class 6 Mathematics Chapter 3 Playing with Numbers Exercise 3.3

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Question 1: Using divisibility test, determine which of the following numbers are divisible by 2; by 3; by 4; by 5; by 6; by 8; by 9; by 10; by 11. (Say yes or no) Answer:

Number	Divisible by								
	2	3	4	5	6	8	9	10	11
128	Yes	No	Yes	No	No	Yes	No	No	No
990	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
1586	Yes	No							
275	No	No	No	Yes	No	No	No	No	Yes
6686	Yes	No							
639210	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes
429714	Yes	Yes	No	No	Yes	No	Yes	No	No
2856	Yes	Yes	Yes	No	Yes	Yes	No	No	No
3060	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
406839	No	Yes	No						

**Question 2**: Using divisibility test, determine which of the following numbers are divisibly by 4; by 8: (a) 572 (b) 726352 (c) 5500 (d) 6000 (e) 12159 (f) 14560 (g) 21084 (h) 31795072 (i) 1700 (j) 2150

(a) 572	→ Divisible by 4 as its last two digits are divisible by 4. → Not divisible by 8 as its last three digits are not divisible by 8.
(b) 726352	→ Divisible by 4 as its last two digits are divisible by 4. → Divisible by 8 as its last three digits are divisible by 8.
(c) 5500	→ Divisible by 4 as its last two digits are divisible by 4. → Not divisible by 8 as its last three digits are not divisible by 8.
(d) 6000	→ Divisible by 4 as its last two digits are 0. → Divisible by 8 as its last three digits are 0.
(e) 12159	$\rightarrow$ Not divisible by 4 and 8 as it is an odd number.
(f) 14560	→ Divisible by 4 as its last two digits are divisible by 4. → Divisible by 8 as its last three digits are divisible by 8.
(g) 21084	→ Divisible by 4 as its last two digits are divisible by 4. → Not divisible by 8 as its last three digits are not divisible by 8.
(h) 31795072	<ul> <li>→ Divisible by 4 as its last two digits are divisible by 4.</li> <li>→ Divisible by 8 as its last three digits are divisible by 8.</li> </ul>
(i) 1700	→ Divisible by 4 as its last two digits are 0. → Not divisible by 8 as its last three digits are not divisible by 8.
(j) 5500	→ Not divisible by 4 as its last two digits are not divisible by 4. → Not divisible by 8 as its last three digits are not divisible by 8.
Question 3. I	Ising divisibility test, determine which of the following numbers are division

**lestion 3**: Using divisibility test, determine which of the following numbers are divisible by 6: (a) 297144 (b) 1258 (c) 4335 (d) 61233 (e) 901352 (f) 438750 (g) 1790184 (h) 12583 (i) 639210 (j) 17852 Answer: (a) 297144  $\rightarrow$  Divisible by 2 as its units place is an even number.

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	<ul> <li>→ Divisible by 3 as sum of its digits (= 27) is divisi</li> <li>2 and 3, therefore, it is also divisible by 6.</li> </ul>	ble by 3. Since the number is divisible by both				
(b) 1258	<ul> <li>→ Divisible by 2 as its units place is an even numb</li> <li>→ Not divisible by 3 as sum of its digits (= 16) is not divisible by both 2 and 3, therefore, it is not divisible</li> </ul>	er. ot divisible by 3. Since the number is not sible by 6.				
(c) 4335 Since the nu	→ Not divisible by 2 as its units place is not an even number. → Divisible by 3 as sum of its digits (= 15) is divisible by 3. the number is not divisible by both 2 and 3, therefore, it is not divisible by 6.					
(d) 61233 Since the nur	→ Not divisible by 2 as its units place is not an eve → Divisible by 3 as sum of its digits (= 15) is divisil mber is not divisible by both 2 and 3, therefore, it is	n number. ble by 3. not divisible by 6.				
(e) 901352	$\rightarrow$ Divisible by 2 as its units place is an even numb	er.				
	$\rightarrow$ Not divisible by 3 as sum of its digits (= 20) is not divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3, therefore, it is not division.	ot divisible by 3. Since the number is not sible by 6.				
(f) 438750	<ul> <li>→ Divisible by 2 as its units place is an even numb</li> <li>→ Divisible by 3 as sum of its digits (= 27) is not d both 2 and 3, therefore, it is divisible by 6.</li> </ul>	er. ivisible by 3. Since the number is divisible by				
(g) 1790184	<ul> <li>→ Divisible by 2 as its units place is an even numb</li> <li>→ Divisible by 3 as sum of its digits (= 30) is not both 2 and 3, therefore, it is divisible by 6.</li> </ul>	per. divisible by 3. Since the number is divisible by				
(h)12583	<ul> <li>→ Not divisible by 2 as its units place is not an ev</li> <li>→ Not divisible by 3 as sum of its digits (= 19) is divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3, therefore, it is not divisible by both 2 and 3.</li> </ul>	ven number. not divisible by 3. Since the number is not visible by 6.				
(I) 639210	<ul> <li>→ Divisible by 2 as its units place is an even num</li> <li>→ Divisible by 3 as sum of its digits (= 21) is not c both 2 and 3, therefore, it is divisible by 6.</li> </ul>	ber. livisible by 3. Since the number is divisible by				
(j) 17852	<ul> <li>→ Divisible by 2 as its units place is an even number of the second seco</li></ul>	per. not divisible by 3. Since the number is not risible by 6.				
Question 4: (a) 5445 (b) $\therefore$ Answer: (a) 5445 $\rightarrow$ 5 $\rightarrow$ 5 $\rightarrow$ 1 Since the diff	Using divisibility test, determine which of the follow 10824 (c) 7138965 (d) 70169308 (e) 10000001 (f) 9 Sum of the digits at odd places = $4 + 5 = 9$ Sum of the digits at even places = $4 + 5 = 9$ Difference of both sums = $9 - 9 = 0$ ference is 0, therefore, the number is divisible by 11	ving numbers are divisible by 11: 01153				
(b) 10824 → → →	Sum of the digits at odd places = $4 + 8 + 1 = 13$ Sum of the digits at even places = $2 + 0 = 2$ Difference of both sums = $13 - 2 = 11$					
Since the dif	ference is 11, therefore, the number is divisible by 1	1.				
(c) 7138965	S → Sum of the digits at odd places = $5 + 9 + 3 + 7 =$ → Sum of the digits at even places = $6 + 8 + 1 = 15$ → Difference of both sums = $24 - 15 = 9$	24				
(d) 70169308	B → Sum of the digits at odd places = $8 + 3 + 6 + 0 =$ → Sum of the digits at even places = $0 + 9 + 1 + 7 =$ → Difference of both sums = $17 - 17 = 0$	= 17 = 17				



Since the difference is 0, therefore, the number is divisible by 11.

(e) 10000001  $\rightarrow$  Sum of the digits at odd places = 1 + 0 + 0 + 0 = 1  $\rightarrow$  Sum of the digits at even places = 0 + 0 + 0 + 1 = 1  $\rightarrow$  Difference of both sums = 1 - 1 = 0

Since the difference is 0, therefore, the number is divisible by 11.

(f) 901153  $\rightarrow$  Sum of the digits at odd places = 3 + 1 + 0 = 4  $\rightarrow$  Sum of the digits at even places = 5 + 1 + 9 = 15  $\rightarrow$  Difference of both sums = 15 - 4 = 11

Since the difference is 11, therefore, the number is divisible by 11.

**Question 5**: Write the smallest digit and the largest digit in the blanks space of each of the following numbers so that the number formed is divisively by 3:

(a) \_\_\_\_\_ 6724(b) 4765 \_\_\_\_\_ 2

Answer:

(a) We know that a number is divisible by 3 if the sum of all digits is divisible by 3. Therefore, Smallest digit : 2 → 26724 = 2 + 6 + 7 + 2 + 4 = 21Largest digit : 8 → 86724 = 8 + 6 + 7 + 2 + 4 = 27

(b) We know that a number is divisible by 3 if the sum of all digits is divisible by 3. Therefore, Smallest digit :  $0 \rightarrow 476502 = 4 + 7 + 6 + 5 + 0 + 2 = 24$ Largest digit :  $9 \rightarrow 476592 = 4 + 7 + 6 + 5 + 0 + 2 = 33$ 

**Question 6**: Write the smallest digit and the largest digit in the blanks space of each of the following numbers so that the number formed is divisively by 11:

(a) 92 \_\_\_\_\_ 389 (b) 8 \_\_\_\_\_ 9484 Answer:

(a)We know that a number is divisible by 11 if the difference of the sum of the digits at odd places and that of even places should be either 0 or 11.

Therefore, 928389  $\rightarrow$  Odd places = 9 + 8 + 8 = 25 Even places = 2 + 3 + 9 = 14 Difference = 25 - 14 = 11

(b) We know that a number is divisible by 11 if the difference of the sum of the digits at odd places and that of even places should be either 0 or 11.

Therefore, 869484  $\rightarrow$  Odd places = 8 + 9 + 8 = 25 Even places = 6 + 4 + 4 = 14 Difference = 25 - 14 = 11

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