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DIVISIBILITY RULES AND SHORTCUTS



DIVISIBILITY RULES

POINTS TO REMEMBER

1 7 8

Look at the last digit
Is it 0 , 2 , 4 , 6 , or 8 ?
If it is then the number is
divisible by 2

Number	Divisible?	Why?
456	Yes	The last digit is 6
68	Yes	The last digit is 8
25	No	The last digit is 5 (<i>not</i> a 2,4,6,or 8)
207	No	The last digit is 7 (<i>not</i> a 2,4,6,or 8)

DIVISIBILITY RULES

POINTS TO REMEMBER

↓ ↓ ↓ ↓
2 0 7 9

Add the digits
 $2 + 0 + 7 + 9 = 18$
18 is a multiple of 3
So 2079 is divisible by 3

Number	Divisible?	Why?
405	Yes	$4 + 0 + 5 = 9$ (9 is a multiple of 3)
381	Yes	$3 + 8 + 1 = 12$ (12 is a multiple of 3)
928	No	$9 + 2 + 8 = 19$ (19 is <i>not</i> a multiple of 3)
4,616	No	$4 + 6 + 1 + 6 = 17$ (17 is <i>not</i> a multiple of 3)

DIVISIBILITY RULES

POINTS TO REMEMBER

4 6 2 4

Look at the last two digits
What number do you see? 24
24 is a multiple of 4
So 4624 is divisible by 4

Number	Divisible?	Why?
348	Yes	48 is a multiple of 4
27,616	Yes	16 is a multiple of 4
8,514	No	14 is <i>not</i> a multiple of 4
722	No	22 is <i>not</i> a multiple of 4
1,200	Yes	The last two digits are 00 200 is a multiple of 4

DIVISIBILITY RULES

POINTS TO REMEMBER

6 5 **5**

Look at the last digit
If it is a 5 or a 0 the number is
divisible by 5

Number	Divisible?	Why?
3,425	Yes	The last digit is 5
750	Yes	The last digit is 0
8,551	No	The last digit is 1 (<i>not</i> a 0 or a 5)
394	No	The last digit is 4 (<i>not</i> a 0 or a 5)

DIVISIBILITY RULES

POINTS TO REMEMBER

6 2 9 4

Is it a multiple of 2 and a multiple of 3?

The last digit is 4 so it is a multiple of 2

What do the digits add up to?

$$6 + 2 + 9 + 4 = 21$$

21 is a multiple of 3

So 6294 is divisible by 6

Number	Divisible?	Why?
5,106	Yes	The last digit is a 2 (it is a multiple of 2) and... $5 + 1 + 0 + 6 = 12$ (12 is a multiple of 3)
636	Yes	The last digit is a 6 (it is a multiple of 2) and... $6 + 3 + 6 = 15$ (15 is a multiple of 3)

DIVISIBILITY RULES

POINTS TO REMEMBER

↓ ↓ ↓ ↓ ↓
4 6 9 2 6

Add the digits
 $4 + 6 + 9 + 2 + 6 = 27$
27 is a multiple of 9
So 46926 is divisible by 9

Number	Divisible?	Why?
7,686	Yes	$7 + 6 + 8 + 6 = 27$ (27 is a multiple of 9)
252	Yes	$2 + 5 + 2 = 9$ (9 is a multiple of 9)
883	No	$8 + 8 + 3 = 19$ (19 is <i>not</i> a multiple of 9)
5,105	No	$5 + 1 + 0 + 5 = 11$ (11 is <i>not</i> a multiple of 9)

DIVISIBILITY RULES

POINTS TO REMEMBER

3 4 0

Look at the last digit
If it is a 0 the number is divisible by 10

Number	Divisible?	Why?
880	Yes	The last digit is 0
9,560	Yes	The last digit is 0
312	No	The last digit is 2 (<i>not</i> a 0)
7,897	No	The last digit is 7 (<i>not</i> a 0)

DIVISIBILITY RULES

POINTS TO REMEMBER

Rule: A number passes the test for 11 if the difference of the sums of alternating digits is divisible by 11.

Rule for Divisibility by 11

$$\begin{array}{r} 10,813 ? \\ 10,813 \\ 1+8+3 = 12 \\ 0+1 = 1 \\ 12 - 1 = 11 \\ 11 \div 11 \end{array}$$

DIVISIBILITY RULES



POINTS TO REMEMBER

- 12 divisible by both 3 and 4
- 15 divisible by both 3 and 5
- 18 divisible by both 2 and 9
- 20 last digit is 0 and the preceding digit is an even number
- 22 divisible by both 2 and 11
- 24 divisible by both 3 and 8
- 25 last two digits are 00, 25, 50, or 75
- 30 last digit is 0 and it is divisible by 3
- 33 divisible by both 3 and 11
- 36 divisible by both 4 and 9
- 40 divisible by both 5 and 8
- 44 divisible by both 4 and 11
- 48 divisible by both 6 and 8
- 50 last two digits are 00 or 50

PROBLEM 1:



If the product $3252 * 9P2$ is divisible by 12, the value of P is:

- A. 8
- B. 5
- C. 2
- D. 1

Option: D



PROBLEM 2:



Which of the following numbers is divisible by 24?

- A. 35718
- B. 3125736
- C. 537804
- D. 63810

Option: B



PROBLEM 3:



How many of the following numbers are divisible by 132?

264, 396, 462, 792, 968, 2178, 5184, 6336

- A. 5
- B. 7
- C. 4
- D. 6

Option: C



PROBLEM 4:



476XY0 is divisible by both 3 & 11. The non-zero digits in the hundred's and ten's places are respectively:

- A. 7 & 4
- B. 5 & 7
- C. 8 & 5
- D. None of these

Option: C



PROBLEM 5:



The least perfect square, which is divisible by each of 15, 20 and 36 is:

- (A) 1200
- (B) 800
- (C) 1000
- (D) 900

Answer: (D)



PROBLEM 6:



When the integer n is divided by 8, the remainder is 3. What is the remainder if $6n$ is divided by 8?

- A. 0
- B. 2
- C. 1
- D. 3

Correct Op: B



PROBLEM 7:



The sum of three consecutive natural numbers each divisible by 3 is 72. What is the largest among them?

- A. 21
- B. 24
- C. 27
- D. 30

Correct Op: C



PROBLEM 8:



The total number of two-digit positive integer $<$ than 100, which are not divisible by 2, 3 and 5 is

- A. 23
- B. 24
- C. 25
- D. 26

Correct Op: B



PROBLEM 9:



Which of the following numbers is not divisible by 14?

- A) 3542
- B) 2086
- C) 1998
- D) 2996

ANS:Option C



PROBLEM 10:



How many of the following numbers are divisible by 3 but not by 9.

4320, 2343, 3474, 4131, 5286, 5340, 6336, 7347, 8115, 9276

- a) 5
- b) 6
- c) 7
- d) None of these

ANS: b) 6



PROBLEM 11:



The difference between the squares of two consecutive odd integers is always divisible by:

- a) 3
- b) 6
- c) 7
- d) 8

ANS:d)



PROBLEM 12:



If p and q are the two digits of the number $653pq$ such that this number is divisible by 80, then $p+q$ is equal to :

- a) 2
- b) 3
- c) 4
- d) 6

ANS:a)



PROBLEM 13:



A 3-digit number $4p3$ is added to another 3-digit number 984 to give the four-digit number $13q7$, which is divisible by 11 . Then, $(p + q)$ is :

- a) 10
- b) 11
- c) 12
- d) 13

ANS: a)



PROBLEM 14:



A six-digit number is formed by repeating a three-digit number; for example, 256256 or 678678 etc. Any number of this form is always exactly divisible by :

- a) 7 only
- b) 13 only
- c) 11 only
- d) 1001

ANS: d)



PROBLEM 15:



If the number $653ab$ is divisible by 90, then $(a + b) = ?$

a) 2

b) 3

c) 4

d) 6

ANS: c)



PROBLEM 16:



P is a whole number which when divided by 4 gives 3 as remainder. What will be the remainder when $2P$ is divided by 4 ?

- a) 2
- b) 3
- c) 4
- d) 6

ANS: a)



PROBLEM 17:



The difference between two numbers is 2395. When the larger number is divided by the smaller one, the quotient is 6 and the remainder is 15. The smaller number is

- a) 200
- b) 334
- c) 476
- d) 634

ANS: c)



PROBLEM 18:



If x is a whole number, then $x^2(x^2 - 1)$ is always divisible by

- a) $12-x$
- b) Multiple of 12
- c) 12
- d) 24

ANS: c)



PROBLEM 19:



A number is divided by 221, the remainder is 64. If the number be divided by 13 then remainder will be

- a) 1
- b) 2
- c) 3
- d) 4

ANS: b)



PROBLEM 20:



How many numbers between 190 and 580 are divisible by 4,5 and 6?

a) 6

b) 7

c) 8

d) 9

ANS: a)

