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11/14/24

Ch. 1 Divisibility Rules

Divisibility Rules	
Number	Rule
2	Number is EVEN (ones place has 0, 2, 4, 6, 8)
3	<u>Sum of the digits</u> is divisible by 3
5	Ones place has a 0 or 5
6	Number is EVEN <u>AND</u> divisible by 3 $2 + 3$
9	<u>Sum of the digits</u> is divisible by 9
10	Ones place has a 0

sums
↓

#	2	3	5	6	9	10
9 117	X	✓	X	X	✓	X
3 201	X	✓	X	X	X	X
6 105	X	✓	✓	X	X	X
15 69	X	✓	X	X	X	X
10 127	X	X	X	X	X	X
12 72,003	X	✓	X	X	X	X
14 6,008	✓	X	X	X	X	X
42 7,890,288	✓	✓	X	✓	X	X
4 301	X	X	X	X	X	X
30 142,896						

Ch. 7 Factors

11/15/24

Factors

a # multiplied by another # to make a product.

$$\begin{array}{ccc}
 2 & \times & 3 = 6 \\
 \swarrow & & \searrow \\
 \text{factors} & & \text{product}
 \end{array}$$

18	
1	18
2	9
3	6

~~1~~ ~~2~~ ~~3~~ ~~4~~ ~~5~~ 63 factor pairs
6 unique factors1, 2, 3, 6, 9, 18

4	
1	4
2	2

~~1~~ ~~2~~ ~~3~~ ~~4~~2 factor pairs
3 unique factors1, 2, 4

40

1	40
2	20
4	10
5	8

~~1~~, ~~2~~, ~~3~~, ~~4~~, ~~5~~, ~~6~~, ~~7~~, 8

4 factor pairs
8 unique factors

L+OG 1, 2, 4, 5, 8, 10, 20, 40

*★

⑨

36

1	36
2	18
3	12
4	9
6	6

~~1~~, ~~2~~, ~~3~~, 4

$\begin{array}{r} 18 \\ 2 \overline{) 36} \\ \underline{2} \\ 16 \\ \underline{16} \end{array}$ 3x

5 factor pairs
9 unique factor

1, 2, 3, 4, 6, 9, 12, 18, 36

Ch. 7 Multiples

11/18/24

multiple a # $\times$ by a
Counting #.

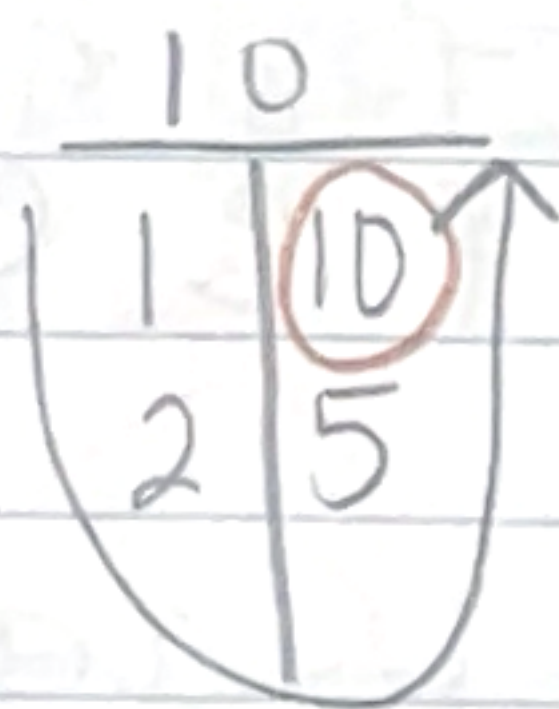
$$\begin{array}{cccc} \underline{5} & \underline{10} & \underline{15} & \underline{20} \\ 5 \times 1 & 5 \times 2 & 5 \times 3 & 5 \times 4 \end{array}$$

1st 10 multiples

10: 10 20 30 40 50 60 70 80 90 100

Next 10 multiples

10: 10 20 30 40 50 60 70 80 90 100 110



every # is a
factor AND
multiple of
itself!

Common multiples

2: 2 4 6 8 10 12 14 16 18 20
4: 4 8 12 16 20 24 28 32 36 40

4, 8, 12, 16, 20

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11/19/24 Ch. 7 Prime + Composite

prime has only 2 unique factors
1 and itself

$$\begin{array}{r|l} 2 & \\ \hline 1 & 2 \end{array}$$

(2)

$$\begin{array}{r|l} 4 & \\ \hline 1 & 4 \\ 2 & 2 \end{array}$$

(3)

Composite

Composite 3 or more unique factors

$$\begin{array}{r|l} 18 & \\ \hline 1 & 18 \\ 2 & 9 \\ 3 & 6 \end{array}$$

com

$$\begin{array}{r|l} 15 & \\ \hline 1 & 15 \\ 3 & 5 \end{array}$$

C

$$\begin{array}{r|l} 49 & \\ \hline 1 & 49 \\ 7 & 7 \end{array}$$

C

1	2	3	4	5	6	7	8	9	10
N	P	P	C	P	C	P	C	C	C

exceptions

1 and 0 are
Neither prime nor composite

$$\begin{array}{r|l} 1 & \\ \hline 1 & 1 \end{array}$$

$$\begin{array}{r|l} 0 & \\ \hline 0 & 0 \end{array}$$

only 1
unique
factor

Ch. 7 Number Patterns

11/20/24

$+5$ $+5$ $+5$
 $27, 32, 37, 42, \underline{47}, \underline{52}, \underline{57}$

Rule: $+5$ Next 3 terms: $\underline{47, 52, 57}$

$+2$ $+2$ $+2$
 $41, 38, 40, 37, 39, \underline{36}, \underline{38}, \underline{35}$
 -3 -3 -3

Rule: $-3, +2$ Next 3 terms: $\underline{36, 38, 35}$

First term is 7.

Rule: Subtract 4, add 5

Find the NEXT 6 terms

$+5$ $+5$ $+5$
 $7, \underline{3}, \underline{8}, \underline{4}, \underline{9}, \underline{5}, \underline{10}$
 -4 -4 -4

First term: 4

Rule $+6, -5$

Find the FIRST 8 terms

$\begin{array}{cccccccc} & \wedge & & \wedge & & \wedge & & \wedge \\ 4 & 10 & 5 & 11 & 6 & 12 & 7 & 13 \\ & \vee & & \vee & & \vee & & \\ & -5 & & -5 & & -5 & & \end{array}$