SCIENTIFIC NOTATION GUIDED NOTES AND PRACTICE

TEACH EASY

Includes a 2 page notes/reference with examples and practice problems, a 2 page student guided notes with practice problems, and a worksheet with 24 practice problems!

5.8×10^4

??? ? Huh ? ????

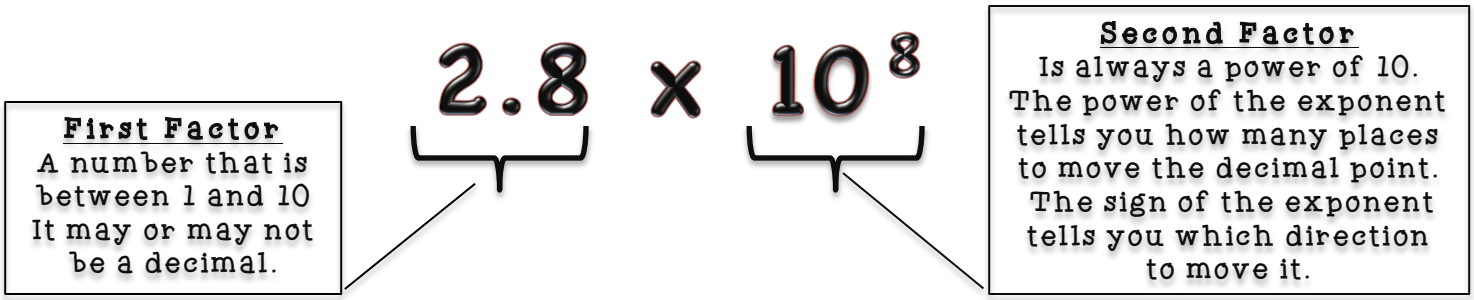
SCIENTIFIC NOTATION

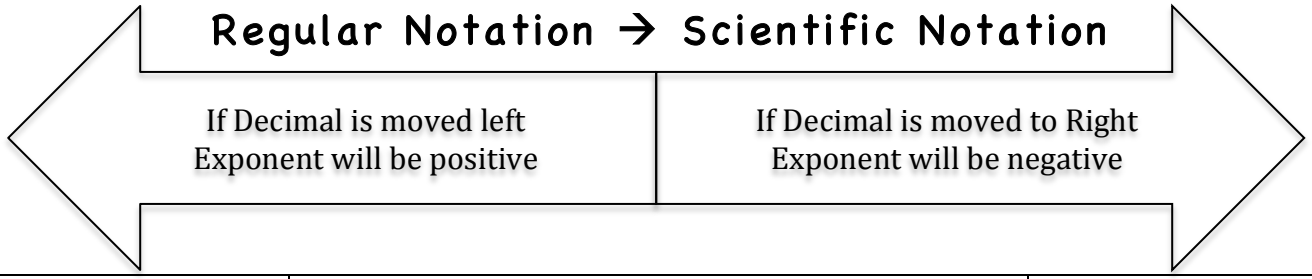
Regular Notation (RN)- The standard way that we write our numbers.

Ex: Two Hundred and Eight Million is written - 280,000,000.

Scientific Notation (SN)- A shorthanded way of writing really large or really small numbers. In SN a number is written as the *product* of two factors.

Ex: 280,000,000 can be written in scientific notation as $2.8\ x\ 10^8$.





Regular Notation	How to Change	Scientific Notation
420,000.	Move the decimal after the 4 and before the 2 That is 5 places to the left Multiply 4.2 by 10 to the 5th power	$4.2\ x\ 10^5$
735,000,000.	Move the decimal after the 7 and before the 3 That is 8 places to the left Multiply 7.35 by 10 to the 8th power	$7.35\ x\ 10^8$
.00897	Move the decimal after the 8 and before the 9 That is 3 places to the right Multiply 8.97 by 10 to the -3rd power	$8.97\ x\ 10^{-3}$
.0000014	Move the decimal after the 1 and before the 4 That is 6 places to the right Multiply 1.4 by 10 to the -6th power	$1.4\ x\ 10^{-6}$

Scientific Notation → Regular Notation

If exponent is Negative
Move decimal to the Left
Add zeros where needed.

If exponent is Positive
Move decimal to the Right
Add zeros where needed.

Scientific Notation	How to Change	Regular Notation
7.5×10^5	Exponent is positive 5. Move the decimal 5 places to the right	750,000.
3.8×10^4	Exponent is positive 4. Move the decimal 4 places to the right	38,000.
4.2×10^{-3}	Exponent is Negative 3. Move the decimal 3 places to the left.	.0042
7.51×10^{-5}	Exponent is Negative 5. Move the decimal 5 places to the left.	.0000751

PRACTICE:

Change from Regular Notation to Scientific Notation:

1.) 45,000 _____

2.) 9,000,000 _____

3.) 7,450 _____

4.) .0000378 _____

5.) .05 _____

6.) 670,400 _____

7.) 7,070,000,000 _____

8.) .00000089 _____

9.) .18900097 _____

10.) 570,000,000 _____

Change from Scientific Notation to Regular Notation:

1.) 9.46×10^{-6} _____

2.) 2.5×10^3 _____

3.) 1.6×10^{-2} _____

4.) 4×10^5 _____

5.) 7.25×10^4 _____

6.) 3.2456×10^{-8} _____

7.) 6×10^{-3} _____

8.) 9.7×10^7 _____

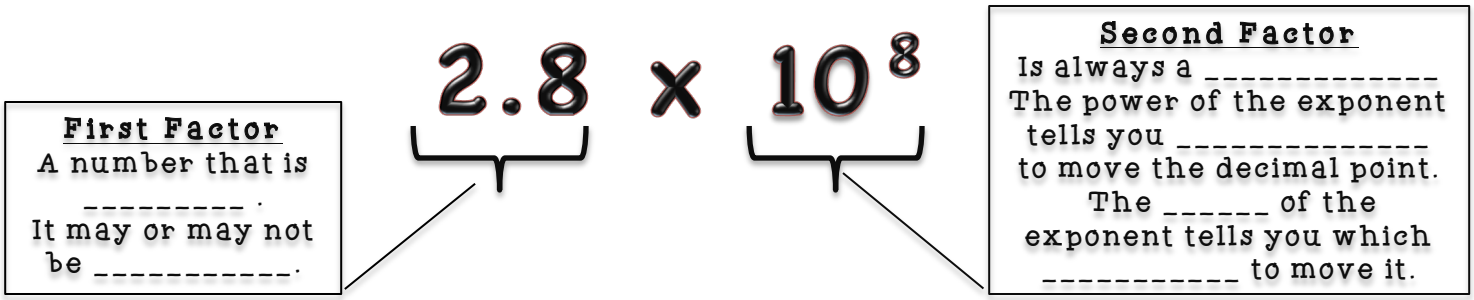
9.) 5.06×10^{-4} _____

10.) 8×10^2 _____

SCIENTIFIC NOTATION

Regular Notation (RN)- The _____ _____ that we write our numbers.
Ex: Two Hundred and Eight Million is written - _____

Scientific Notation (SN)- A _____ _____ of writing really large or really small numbers. In SN a number is written as the _____ of _____ _____.
Ex: 280,000,000 can be written in scientific notation as _____



Regular Notation → Scientific Notation

If Decimal is moved _____.
Exponent will be _____.

If Decimal is moved to _____.
Exponent will be _____.

Regular Notation	How to Change	Scientific Notation
420,000.	Move the decimal after the 4 and before the 2 That is 5 places to the left Multiply 4.2 by 10 to the 5^{th} power	
735,000,000.	Move the decimal after the 7 and before the 3 That is 8 places to the left Multiply 7.35 by 10 to the 8^{th} power	
.00897	Move the decimal after the 8 and before the 9 That is 3 places to the right Multiply 8.97 by 10 to the -3^{rd} power	
.0000014	Move the decimal after the 1 and before the 4 That is 6 places to the right Multiply 1.4 by 10 to the -6^{th} power	

Scientific Notation → Regular Notation

If exponent is _____
Move decimal to the _____
Add zeros where needed.

If exponent is _____
Move decimal to the _____
Add zeros where needed.

Scientific Notation	How to Change	Regular Notation
7.5×10^5	Exponent is positive 5. Move the decimal 5 places to the right	
3.8×10^4	Exponent is positive 4. Move the decimal 4 places to the right	
4.2×10^{-3}	Exponent is Negative 3. Move the decimal 3 places to the left.	
7.51×10^{-5}	Exponent is Negative 5. Move the decimal 5 places to the left.	

PRACTICE:

Change from Regular Notation to Scientific Notation:

1.) 45,000 _____

2.) 9,000,000 _____

3.) 7,450 _____

4.) .0000378 _____

5.) .05 _____

6.) 670,400 _____

7.) 7,070,000,000 _____

8.) .00000089 _____

9.) .18900097 _____

10.) 570,000,000 _____

Change from Scientific Notation to Regular Notation:

1.) 9.46×10^{-6} _____

2.) 2.5×10^3 _____

3.) 1.6×10^{-2} _____

4.) 4×10^5 _____

5.) 7.25×10^4 _____

6.) 3.2456×10^{-8} _____

7.) 6×10^{-3} _____

8.) 9.7×10^7 _____

9.) 5.06×10^{-4} _____

10.) 8×10^2 _____

ANSWER KEY:

Change from Regular Notation to Scientific Notation:		Change from Scientific Notation to Regular Notation:	
1.) 45,000	4.5×10^4	*1.)* 9.46×10^{-6}	*.00000946*
2.) 9,000,000	9×10^6	*2.)* 2.5×10^3	*2500*
3.) 7,450	7.45×10^3	*3.)* 1.6×10^{-2}	*.016*
4.) .0000378	3.78×10^{-7}	*4.)* 4×10^5	*400,000*
5.) .05	5×10^{-2}	*5.)* 7.25×10^4	*72,500*
6.) 670,400	6.704×10^5	*6.)* 3.2456×10^{-8}	*.000000032456*
7.) 7,070,000,000	7.070×10^9	*7.)* 6×10^{-3}	*.006*
8.) .00000089	8.9×10^{-7}	*8.)* 9.7×10^7	*97,000,000*
9.) .18900097	1.8900097×10^{-1}	*9.)* 5.06×10^{-4}	*.000506*
10.) 570,000,000	5.7×10^8	*10.)* 8×10^2	*800*

STUDENT NAME: _____ DATE: _____

SCIENTIFIC NOTATION

CONVERT EACH NUMBER IN SCIENTIFIC NOTATION TO REGULAR NOTATION

If exponent is Negative
Move decimal to the Left
Add zeros where needed.

If exponent is Positive
Move decimal to the Right
Add zeros where needed.

1. 2.47×10^{-3} _____
2. 9.3×10^{7} _____
3. 8.5×10^{-5} _____
4. 2.07×10^{6} _____
5. 7×10^{-8} _____
6. 3×10^{2} _____
7. 4.5×10^{-5} _____
8. 5.5×10^{5} _____
9. 6.3×10^{-1} _____
10. 1.98×10^{4} _____
11. 2.4×10^{-5} _____
12. 9.2×10^{7} _____

CONVERT EACH NUMBER IN REGULAR NOTATION TO SCIENTIFIC NOTATION

If Decimal is moved left
Exponent will be positive

If Decimal is moved to Right
Exponent will be negative

1. 0.0024 _____
2. 5,604 _____
3. 693.75 _____
4. 0.087 _____
5. 8,550,000 _____
6. 12,000,000 _____
7. 0.0000035 _____
8. 45,995 _____
9. 754.256 _____
10. 0.0088 _____
11. 1.8907 _____
12. 25,009 _____

ANSWER KEY

SCIENTIFIC NOTATION

CONVERT EACH NUMBER IN SCIENTIFIC NOTATION TO REGULAR NOTATION

If exponent is Negative
Move decimal to the Left
Add zeros where needed.

If exponent is Positive
Move decimal to the Right
Add zeros where needed.

1. 2.47×10^{-3} 0.0247
2. 9.3×10^{7} 93,000,000
3. 8.5×10^{-5} 0.000085
4. 2.07×10^{6} 2,070,000
5. 7×10^{-8} 0.00000007
6. 3×10^{2} 300
7. 4.5×10^{-5} 0.000045
8. 5.5×10^{5} 550,000
9. 6.3×10^{-1} 0.63
10. 1.98×10^{4} 19,800
11. 2.4×10^{-5} 0.000024
12. 9.2×10^{7} 92,000,000

CONVERT EACH NUMBER IN REGULAR NOTATION TO SCIENTIFIC NOTATION

If Decimal is moved left
Exponent will be positive

If Decimal is moved to Right
Exponent will be negative

1. 0.0024 2.4×10^{-3}
2. 5,604 5.604×10^{3}
3. 693.75 6.9375×10^{2}
4. 0.087 8.7×10^{2}
5. 8,550,000 8.550×10^{-6}
6. 12,000,000 1.2×10^{7}
7. 0.0000035 3.5×10^{-6}
8. 45,995 4.5995×10^{4}
9. 754.256 7.54256×10^{2}
10. 0.0088 8.8×10^{-3}
11. 18.907 1.8×10^{1}
12. 25,009 2.5009×10^{4}