## CHECK FOR UNDERSTANDING

Put your name.
No asking questions/no notes.
Hold it up when done!

Calculate. All answers must be in scientific notation.

1) $\left(2.84 \times 10^{6}\right)\left(3 \times 10^{4}\right)$
2) $\left(\mathbf{7 . 6 5} \times 10^{5}\right)-\left(1.4 \times 10^{3}\right)$
3) $\frac{4 \times 10^{50}}{8 \times 10^{47}}$

Calculate. All answers must be in scientific notation.

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2) $\left(7.65 \times 10^{5}\right)-\left(1.4 \times 10^{3}\right)$
3) $\frac{4 \times 10^{50}}{8 \times 10^{47}}$

| 1) $2.84 \cdot 3=8.52$ | 2) 765000 | 1) $4 \div 8=0.5$ |
| :--- | :---: | :---: |
| $6+4=10$ | -1400 | $50-47=3$ |
| $\mathbf{8 . 5 2 \times 1 0} \mathbf{1 0}$ | 763600 | $\mathbf{0 . 5 \times \mathbf { 1 0 } ^ { 3 }}$ |
|  | $\mathbf{7 . 6 3 6} \times \mathbf{1 0}^{\mathbf{5}}$ | $\mathbf{5} \times \mathbf{1 0}^{\mathbf{2}}$ |

p. $63(1,2,4,8)$ and p. $65(19,21,22)$

1) $8.97 \times 10^{8}$
2) $4 \times 10^{2}$
3) $3.762 \times 10^{-7}$
(changed from $0.4 \times 10^{3}$ )
(changed from $37.62 \times 10^{-8}$ )
4) $1.334864 \times 10^{10}$
5) $6.3 \times 10^{4}$
6) $1.115 \times 10^{5}$
7) $9.563 \times 10^{11}$

OBJECTIVE:
Solve story problems involving adding, subtracting, multiplying, dividing scientific notation

Find the perimeter and area of the square:


Find the perimeter and area of the square:
Area $=s^{2}$
$\mathrm{~A}=\left(5 a^{4}\right)^{2}$
$\mathrm{~A}=25 a^{8}$
$5 \mathrm{a}^{4}$

$\mathrm{P}=4 \cdot 5 a^{4}$
$\mathrm{P}=4 \cdot 5 \cdot a \cdot a \cdot a \cdot a$
$\mathrm{P}=20 a^{4}$

Add, subtract, multiply, or divide?
Find the area of the rectangle:


## Story Problem

The distance from the Earth to the Sun is $1.46 \times 10^{8}$ kilometers. The distance from the Earth to the Moon is 3.84 x $10^{5}$ kilometers. About how many times greater is the distance from the Earth to the Sun than the Earth to the Moon?

$$
\frac{1.46 \times 10^{8}}{3.84 \times 10^{5}}=
$$

$\qquad$

## Story Problem

In 2005, $8.1 \times 10^{10}$ text messages were sent in the US. By 2007, the number of annual text messages had risen to $3.63 \times 10^{11}$. How many more texts were sent in 2007 than in 2005?
$3.63 \times 10^{11}-8.1 \times 10^{10}=$ $\qquad$

## Story Problem

The US Government spends about 4 trillion dollars per year. If a one The
dollar bill is 0.0001 meters thick, how many meters tall would a stack of 4 trillion one dollar bills be? $\left(1\right.$ trillion $\left.=10^{12}\right)$

## Add, subtract, multiply, or divide?

The bedroom of our house is 1,200 cubic meters. We know that there are $3.4 \times$ $10^{9}$ particles of dust per cubic meter. How many particles of dust are in the bedroom of our house?
1200 cubic meters; EACH ONE has $3.4 \times 10^{9}$ particles $\rightarrow$ multiply!

$$
(1200) \cdot\left(3.4 \times 10^{9}\right)
$$

$\left(1.2 \times 10^{3}\right) \cdot\left(3.4 \times 10^{9}\right)$
$4.08 \times 10^{12}$ dust particles
Add, subtract, multiply, or divide?
Find the length of the rectangle:



## Story Problem

The average human body cell is about $5.1 \times 10^{-4} \mathrm{~cm}$ in diameter. The diameter of a plant cell is $8 \times 10^{-3} \mathrm{~cm}$.
A) Which cell is larger? Plant cell
B) What is the combined diameter of the body cell and the plant cell? $0.00051+0.008=0.00851=8.51 \times 10^{-3}$ C) Set up (but don't solve): How many times larger is the plant cell than the body cell? $8 \times 10^{-3}$
$\approx 1.6 \times 10^{1}$
$\overline{5.1 \times 10^{-4}}$
$\approx 16$ times larger

## Add, subtract, multiply, or divide?

On February 2, 2010, the US Treasury estimated the national debt at $\$ 1.2278 \times 10^{13}$. The U.S. Census Bureau's estimate for the U.S. population was about $3.086 \times 10^{8}$. Using the estimates, how much money is this per person? (For this problem only, you may round the estimates to help with your calculations)


Add, subtract, multiply, or divide?

The speed of light is $3 \times 10^{8}$ meters per second. It takes light about $4.8 \times 10^{3}$ seconds to reach Saturn from the Sun. What is the
The speed of light is $3 \times 10^{8}$ meters per second. How many seconds distance between the sun and Saturn?
distance $=$ rate $\times$ time
$d=\left(3 \times 10^{8}\right)\left(4.8 \times 10^{3}\right)$
$\downarrow$
$d=14.4 \times 10^{11} \longrightarrow d=1.44 \times 10^{12}$
or $\mathbf{1}, 440,000,000,000$ meters

## Homework

## Story Problem Worksheet

## NOTE:

- Every answer MUST be in scientific notation.
- You may use a calculator on some of them - the sheet will tell you which ones


## TOMORROW'S ACTIVITY:

-We will be doing an in-class activity called "levels" where you must get every question in a level correct to move onto the next level.
-However, it is difficult for me to check EVERYONE'S levels at the same time.

- lam going to recruit three student checkers - instead of doing the problems during class tomorrow, they will help check student work
-Those checkers will instead do the levels TONIGHT for homework (on top of the other homework I am about to assign)
-I will also send you home with an answer key so that you can be extra sure you know how the problems work

