Name:_____ Partners: _____

Date: _____ _____

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WORKSHEET
MATHEMATICAL REVIEW EXERCISES

ALL answers must have the proper number of significant figures.

Finding the number significant figures

1. How many significant figures does each of the following numbers contain?

   a.) 4009

   b.) 7.90

   c.) 0.046

2. a) Express the result of this division in the correct number of significant figures

   0.54 / 2.07 =

   b) Express the result of this subtraction in the correct number of significant figures

   5.67 – 1.1 – 0.9378 =

Find the average of the following numbers

3. 150.4, 148.2, 149.6, 151.0, 150.8, 149.8

Convert the following to scientific notation

4. 101100
5. 0.0102
6. 0.00000672

Convert the following to decimal format

7. 9.301×10^{7}
8. 9.301×10^{2}
9. 9.301×10^{-5}

Solve the following expressions for a.

10. $g^6 = at^4/b$
11. $d^2ca = b^4c^3a^2$
12. $d^3a^2 = b^2dc^4$

Solve the following expressions. Write your answer in scientific notation.

13. $(6.125 \times 10^3) \times (2.345 \times 10^4)$

14. $(6.125 \times 10^3) \times (2.345 \times 10^{-4})$

15. $3700.13 \times (6.04 \times 10^4)$

16. $(6.2 \times 10^4) / (0.4 \times 10^{-5})$

Conversions.

17. An object is measured to be 23˚ 15' 47" away from another object. If there are 60' in 1˚ and 60" in 1', convert the angle into decimal form.

18. If one foot equals 12 inches and one mile is 5280 feet, how many miles are in 50000 inches?

19. A day on Saturn lasts 10 hours and 16 minutes. If 34 (Earth) days have passed between two visits of a spacecraft, how many days has it been on Saturn?

Solve the following problems:

20. A spacecraft is traveling at a speed of 2.3 km/sec. It takes 2.5 minutes to pass a small asteroid. How wide is the asteroid (i.e., how far did the spacecraft travel during this time)? Use (distance) = (velocity) × (time).

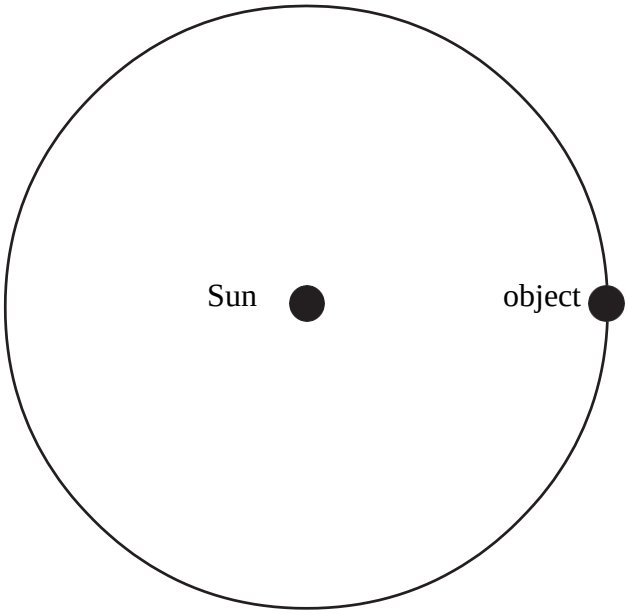
21. A small comet orbits the sun at an average distance, a, of 3.25 AU (Astronomical Units). The closest distance it gets to the sun is d = 0.90 AU. Using the formula below, find how elongated (e) the orbit is.

    $d = a (1 - e)$

22. In 2010, the population of the United States was about 281 million people. At the time, the U.S. national debt was about 13.6 trillion dollars. How much would each person have to contribute to pay off the debt?

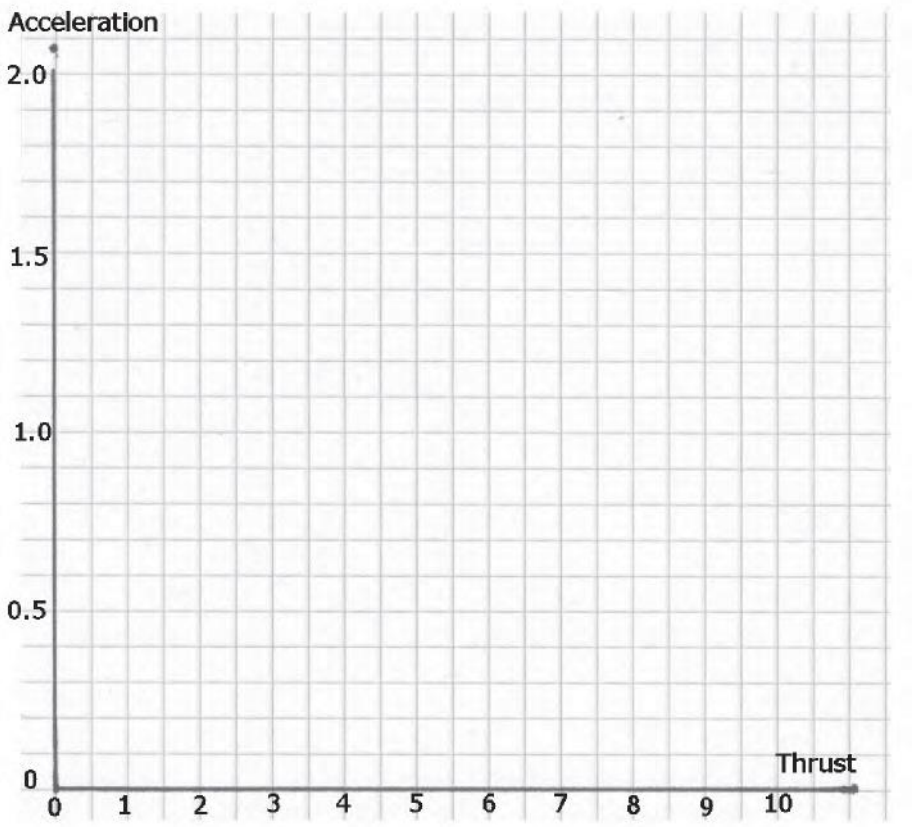
23. The figure below shows an object in orbit around the sun. The scale of the figure is shown by the bar. Using a ruler, measure the length of the bar. Use this to determine the distance from the center of the sun to the center of the object in AU's.

5.21 AU



24. The following table shows values of rocket thrust and acceleration of a spacecraft. Graph the values on Graph 1. Draw a straight line that best fits the points and find the slope of that line.

Thrust	Acceleration
0	0
3.2	0.9
5.2	1.1
7.1	1.8
9.1	1.9

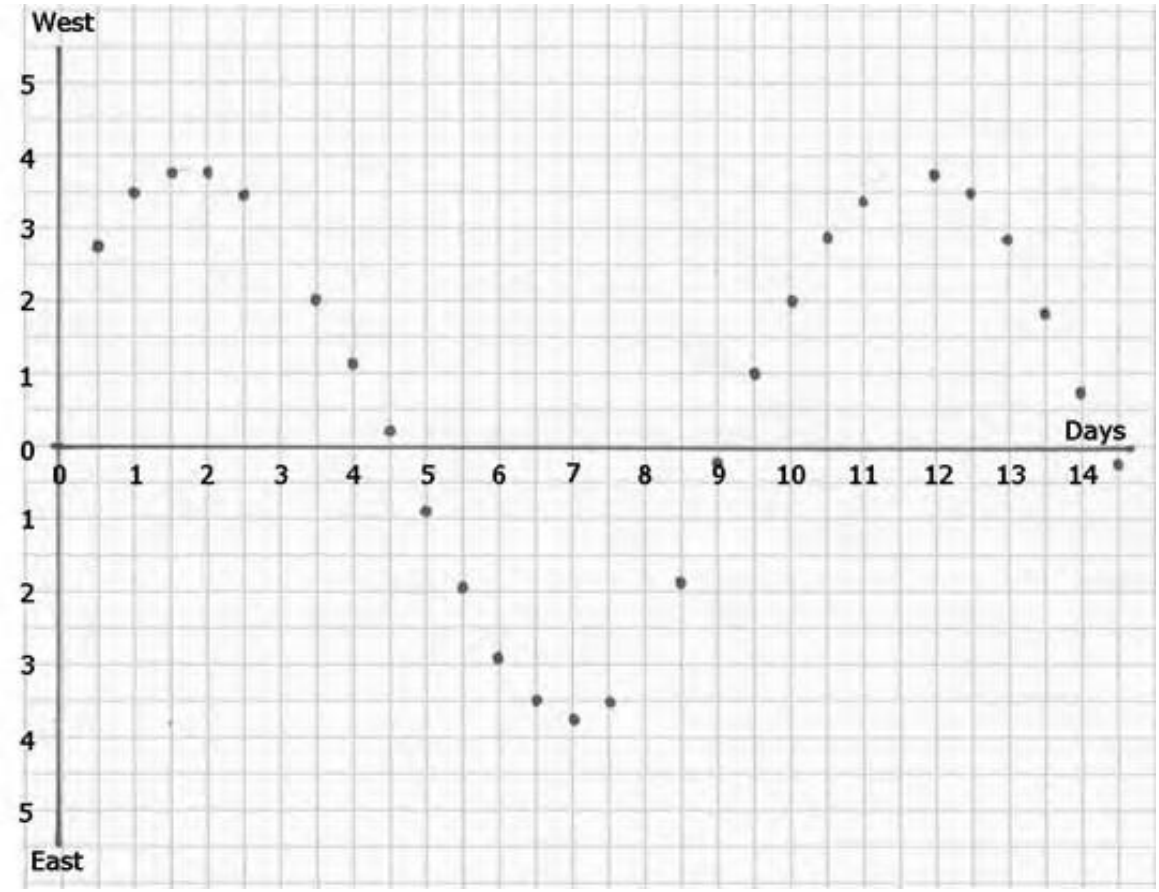


GRAPH 1

25. Graph 2 shows how the position of a moon around a planet changes. Find the period by counting the number of days between two peaks. Find the size of the orbit by reading the value of either the highest point or lowest point.

Period: P = _____

Size of orbit: a = _____



GRAPH 2