

Name \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

No calculators. Show all work. Attach additional pages if necessary clearly labeling problems.

### Astronomy Math Evaluation

#### I. Solve the following fractions:

1.)

$$\frac{1}{2} \div \frac{2}{3} =$$

2.)

$$\frac{5 - 3}{4} =$$

3.)

$$\frac{1}{7} \div \frac{9 - 6}{14} =$$

4.)

$$\frac{7}{2} \times \frac{2}{21} =$$

5.)

$$\frac{1}{3} \times \frac{2}{3} =$$

6.)

$$\frac{5 - 2}{8} \div \frac{9 - 4}{2} =$$

#### II. Solve.

7.) Alejandro bikes an average speed of 7 mph. If he has been biking for 5.5 hours, how far has he traveled?

8.) Paula has to drive 348 miles today. She travels 116 miles in 2 hours. What is her average speed for the first part of her trip?

9.) (See problem 8 above) If Paula's average speed is the same for the entire trip, how long would it take her to arrive at her destination?

10.) How far away can Ezekiel get if he flies his plane for 2 hours if the plane flies at 20 meters per second?

11.) If Flossie traveled for 4 hours and covered 720 miles in that time, how fast was she going?

**III. Use unit factors to perform the unit conversions below to answer the questions:**

12.) 36,000 seconds = how many hours

13.) 2 days = how many seconds

14.) 26,280 hours = how many years

15.) 172,800 seconds = how many days

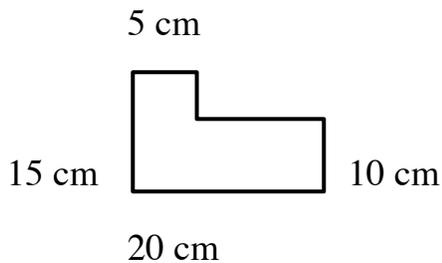
16.) 4 years = how many hours

**IV. Area:**

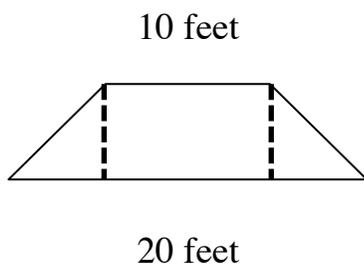
17.) Find the area of a triangle with a height of 6 inches and base of 5 inches.



18.) Find the area of the shape below.



19.) Find the area of the shape below that has a height of 5 feet.



## V. Find the acceleration:

$$acceleration = \frac{final\ velocity - initial\ velocity}{time}$$

20.) A marble is falling straight to the ground from the top of a building. The marble's initial velocity is 2.0 feet per second. After 0.3 seconds, the velocity is 11.6 feet per second. What is the acceleration?

21.) What is the acceleration of a bird whose initial velocity is 12 meters per second and after 0.5 seconds had reached a velocity of 16 meters per second?

22.) A sports car took off at a rate of 24 meters per second and after .15 seconds had reached a velocity of 66 meters per second. What is the acceleration?

## VI. Solve these distance problems using the following formula:

$$distance = \frac{1}{2} \times acceleration \times time^2 \quad \text{Gravity} = 32 \frac{ft}{sec^2} \text{ or } 9.8 \frac{m}{sec^2}$$

23. A cat falls out of a tree and takes 1.4 seconds to land safely on its paws on the ground. How many *meters* did the cat fall?

24. Pete slid a domino off a bridge and it took 2.3 seconds to hit the gulley below. How many *feet* did the domino fall?

25. A penny fell off the top of a building and hit the sidewalk below 3.1 seconds later. How many *meters* did the penny fall to the sidewalk?