Show all of your work using conversion fractions!

Here are the top speeds of several animals in miles per hour:

Animal	Top Speed (mph)
Alligator	11
Hippopotamus	19
Kangaroo	45
Gazelle	50
Cheetah	70

1. In the 2012 Summer Olympic Games, Jamaican sprinter Usain Bolt won the 100 meter sprint gold medal. He ran the 100 meter race in 9.63 seconds. If Usain Bolt were to run a race against the animals in the table, which animals would he be able to beat? (Convert Bolt's speed for the race to miles per hour.)

Show all of your conversion fractions. Remember that 1 inch = 2.54 cm, and 1 mile = 5280 feet.

2. The great Thoroughbred race horse Man O' War set an American record when he ran the Belmont Stakes on June 12, 1920. He ran 12 furlongs in 2:14.2. (Meaning 2 minutes, 14.2 seconds) There are 660 feet in one furlong. Which of the animals in the table would Man O' War be able to beat? (Convert his speed to miles per hour.)

Convert the following rates. Use conversion fractions and show all your work.

3. The acceleration of gravity is known to be 9.8 meters/sec^2. This is _____ feet/sec^2 ?

4. The city blocks in downtown Salt Lake City are 660 feet long. (Sound familiar? That's 1 furlong.) How many city blocks would be covered in a 5.1 km road race? Ignore the road space between the blocks for this problem.

Failure is the chance to do better next time.

For #5-6, determine if each pair of rates are equivalent. Explain your reasoning.

5. $36 for 4 baseball hats; $56 for 7 baseball hats

6. 12 posters for 36 students; 21 posters for 63 students

7. If an employer pays $22 for 2 hours of work, how much will she charge for 5 hours?

8. You can buy 5 oranges for $2.00.

    a. What is the rate?

    b. What is the unit rate for 1 orange?

    c. What is the unit rate for $1?

    d. Which unit rate is the most useful if you are shopping for 7 oranges?

    e. Which unit rate is the most useful if you only have $1 to spend?

Write the two different unit rates for each situation. Then choose the most useful rate for each situation and explain why that one makes the most sense.

9. Your dad bought 4 gallons of gas for $13.

10. Benji went 300 miles in 5 hours on his road trip.

11. The bakery has 8 bags of flour weighing a total of 40 pounds.

12. Potato chips are on sale for 3/$5.00.

13. Jar A of applesauce is 24 ounces and costs $1.25. Jar B is 16 ounces and the price is $0.89. Which is the better deal?

14. Which would be sweeter?   a) 50 mL water with 1 tsp sugar mixed in
                                  b)100 mL water with 3 tsp sugar mixed in
                                  c) 200 mL water with 5 tsp sugar mixed in