1. A runner has just finished running 30 kilometers. Each step he takes is 1.5 meters long. How many steps has he taken at the end of the 30 kilometers?

2. A recipe calls for 2 grams of sugar per 250 grams of flour. How many grams of sugar will be needed if you begin your recipe with 1kg of flour?

3. Your car uses 42 liters of gas. It costs $0.55 per liter. You drive 200 miles at 8 miles per liter. How much will it cost you to drive that distance?

4. A rectangular room is 12 feet wide by 15 feet long. The height of the room is 8 feet long. You plan to buy carpet at $2 per yard. How much will you spend to carpet the room?

You will have the walls painted (not the ceiling or floor) at a cost of $1.50 per square foot. How much will it cost to paint the walls?
7. A runner just finished running 200 meter in a time of 23.0 seconds. How fast did he run in terms of yards per second? Write your answer as a unit rate.

8. A wheel is rotating at 20 revolutions per second. How many revolutions is the wheel rotating per minute?

9. It is known that 16% of all students stay up late the night before an exam. How many students stayed up late if the class consists of 250 students?

10. 4/5 of the students in class have never gone to lab to study. What percent of the students in class have never attended lab?

11. If 22 1/2% of a group of individuals smoke and it is known that 54 smoked – then what was the size of the group?
12. A person can type 84 words every three minutes – how many words will the person have typed in 14 minutes? ______

13. If x is known to be directly proportional to \( t^2 \) and x = 64, when t = 2, then find x when t = 5.

14. The number of male students varies directly to the number of girls in class – define your variables and write an expression for this correspondence.

15. The number ants in inversely proportional to the number of Horn toads in the yard.

At the last count there were 2,000,000 ants and 4 toads, how many ants would you expect with 10 toads? ________

16. You earned $24000 last year. After a end-of-year review you get a 4% raise in salary to go with a promotion. What will be your new salary?
17. You buy a lawn tractor for $1600 and additional attachments worth $840. How much do you owe if there is an 8% tax added on?

18. A merchant wants to make a 20% profit on items that he bought for $262. How much should he sell the items for?

19. You deposit $400 at 3 1/2% simple interest. How much will you have after 27 months?

20. You let a friend borrow $20 and he returns $24. What percent profit did you make?

21. The population of a town is now 26,000. This was after a 4 1/3% increase in population. What was the population before this increase?
22. Change to a percent
   a) \( 2.1 = \underline{\hphantom{0}} \% \)       b) \( \frac{3}{40} = \underline{\hphantom{0}} \% \)

23. Change to a fraction - exact solutions – no rounding - no infinite representations (\( \frac{1}{3} = 0.333\ldots \))
   a) \( 2.4 \% = \underline{\hphantom{0}} \)       b) \( 2 \frac{1}{3} \% = \underline{\hphantom{0}} \)

24. Change to a decimal.
   a) \( \frac{3}{8} = \underline{\hphantom{0}} \)       b) \( 2 \frac{1}{4} \% = \underline{\hphantom{0}} \)

25. Write down the equations that express the following relationships.
   a) \( y \) varies directly as \( x \). \( \rightarrow \) \underline{\hphantom{0}}
   b) \( y \) varies inversely as the square of \( x \). \( \rightarrow \) \underline{\hphantom{0}}

26. A large class consists of 80 boys and 12 girls. It is known that the number of boys vary inversely as the number of girls. How many boys will be in class when there are 20 girls?

   Set up the equation including variable – and then provide the answer – otherwise answer is incorrect!
   correct and proper equation: \underline{\hphantom{0}}
   answer: \underline{\hphantom{0}}
27. Convert

a) 24 feet to inches → 24 feet = __________ inches

b) a runner takes steps that are four feet long – how many yards has he gone when he has taken 1200 steps?

____________

c) A wall is 12 feet by 10 feet and a painter is willing to paint it at a cost of $2.40 per square foot. How much will it cost to paint the wall?

____________

d) How many grams does a 72 kg person weigh?

____________

e) A stick is known to be 250 cm. long. The distance between two points is known to be 52 meters. How many sticks of this size will fit between the points? (end-to-end)

____________

28. Solve for x.

a) \[ \frac{x}{x - 1} = \frac{3}{5} \]

b) \[ \frac{3}{2x - 1} = \frac{1}{x} \]
29. If y varies directly as \( x^2 \), and \( y = 20 \) when \( x = 2 \), then find the constant of proportion. _________

30. Find x if x and y are complementary and \( y = 24^\circ \) → x = _____________
   if x and y are supplementary and \( y = 24^\circ \) → x = ______________
   if x and y are vertical angles and \( y = 24^\circ \) → x = ______________

31. An acute angle is an angle that has a measure
   a) greater than 90°  b) between 0° and 90°  c) equal to 90°  d) NONE of the above

32. A right angle is an angle that has a measure equal to _____________

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