

Conversion Problems

1. Temperatures in degrees Celsius (C) can be converted to temperatures in degrees Fahrenheit (F) by the formula $F = 9/5 \cdot C + 32$. What is the temperature at which $F = C$?
 - (A) 20°
 - (B) $(32/5)^\circ$
 - (C) 0°
 - (D) -20°
 - (E) -40°
2. If an object travels 100 feet in 2 seconds, what is the object's approximate speed in miles per hour? (Note: 1 mile = 5280 feet)
 - A. 3.4
 - B. 3.8
 - C. 34
 - D. 38
 - E. 340
3. The rear wheels of a car crossed a certain line 0.5 second after the front wheels crossed the same line. If the centers of the front and rear wheels are 20 feet apart and the car traveled in a straight line at a constant speed, which of the following gives the speed of the car in miles per hour? (5280 feet = 1 mile)
 - A. $(\frac{20}{5280})(\frac{60^2}{0.5})$
 - B. $(\frac{20}{5280})(\frac{60}{0.5})$
 - C. $(\frac{20}{5280})(\frac{0.5}{60^2})$
 - D. $\frac{(20)(5280)}{(60^2)(0.5)}$
 - E. $\frac{(20)(5280)}{(60)(0.5)}$

4. A train traveling at a constant speed down a straight track crosses a certain line on the track. If the rear wheels of the train cross the line 2 seconds after the front wheels, and the centers of the rear and front wheels are 100 feet apart, which of the following expresses the speed of the train in miles per hour?

1 mile = 5280 feet

(A) $(100/5280)(60^2/2)$

(B) $(100/5280)(60/2)$

(C) $(100/5280)(2/60^2)$

(D) $(100/60^2)(5280/2)$

(E) $(100/60)(5280/2)$

5. A car traveling at a certain constant speed takes 2 seconds longer to travel 1 kilometer than it would take to travel 1 kilometer at 75 kilometers per hour. At what speed, in kilometers per hour, is the car traveling?

A. 71.5

B. 72

C. 72.5

D. 73

E. 73.5

6. If an automobile averaged 22.5 miles per gallon of gasoline, approximately how many kilometers per liter of gasoline did the automobile average? (1 mile = 1.6 kilometers and 1 gallon = 3.8 liters, both rounded to the nearest tenth.)

A. 3.7

B. 9.5

C. 31.4

D. 53.4

E. 136.8

7. If 1 kilometer is approximately 0.6 mile, which of the following best approximates the number of kilometers in 2 miles?

(A) $10/3$

(B) 3

(C) $6/5$

(D) $1/3$

(E) $3/10$

8. If 10 millimeters equal 1 centimeter, how many square centimeters does 1 square millimeter equal?
- A. 0.01
 - B. 0.1
 - C. 1
 - D. 10
 - E. 100
9. The speed of light is approximately 1.86×10^5 miles per second. This approximate speed is how many miles per hour?
- (A) 1.11×10^7
 - (B) 6.70×10^7
 - (C) 1.11×10^8
 - (D) 1.86×10^8
 - (E) 6.70×10^8
10. If the speed of X meters per second is equivalent to the speed of Y kilometers per hour, what is Y in terms of X? (1 kilometer=1000 meters)
- A. $15x/18$
 - B. $6x/5$
 - C. $18x/5$
 - D. $60x$
 - E. $3600000x$
11. According to the formula $F = \frac{9}{5}(C) + 32$, if the temperature in degrees Fahrenheit (F) increases by 27, by how much does the temperature in degrees Celsius (C) increase?
- A) 9
 - B) 15
 - C) 47
 - D) $48 \frac{3}{5}$
 - E) 59

12. On a trolley ride around an amusement park, a child travelled from one signpost to a second signpost at a constant speed of 125 meters per minute. Was the distance that the child travelled from the first signpost to the second signpost greater than 0.8km? (1km = 1,000meters)

1) It took less than 450 seconds for the child to travel from the first signpost to the second signpost

2) It took more than 400 seconds for the child to travel from the first signpost to the second signpost

13. The distance between two planets is 3.04×10^6 light years. What is the distance between the two planets, in parsecs? (1 parsec = 3.26 light years)

(A) 9.3×10^5

(B) 9.9×10^6

(C) 9.3×10^7

(D) 9.9×10^7

(E) 10.1×10^8

14. A rectangular-shaped carpet remnant that measures x feet by y feet is priced at \$50. What is the cost of the carpet, in dollars per square yard? (9 square feet = 1 square yard)

A. $50xy$

B. $450xy$

C. $xy/9$

D. $xy/50$

E. $450/(xy)$

15. The number of meters in AB is equal to the square root of the number of centimeters in AB. What is the length of AB (1 meter=100 centimeters)?

A) 100 meters

B) 10 meters

C) 100 centimeters

D) 10 centimeter

E) 1 centimeter