

Basic math test solution

1. One hundred fifty seven thousand, eight hundred two
2. 36993 is closer to 37000 than it is to 36000, so 36993 rounded to the nearest thousands is 37000
3. The number in the hundredths place is 2. As a rule of thumb, add either 1 or nothing to it. Add 1 if the number on the right is at least 5. Otherwise, add nothing. Since the number on the right is 4, add nothing to 2. You get 7.724. Then drop all number on the right of 2. The answer is 7.72

4.

$$\begin{array}{r} 324 \\ \times 87 \\ \hline 1 \\ 2268 \\ + 25920 \\ \hline 28188 \end{array}$$

5.

$$\begin{array}{r} 81.32 \\ .3214 \\ \hline 11 \\ 32528 \\ 1281320 \\ 1626400 \\ 24396000 \\ \hline 26.136248 \end{array}$$

6.

$$\begin{array}{r} 89 \overline{) 4356} \end{array}$$

4

$$\begin{array}{r} 89 \overline{) 4356} \\ \underline{-356} \\ 796 \end{array}$$

How many times 89 goes into 435? 4 times
 $4 \times 89 = 356$

48

$$\begin{array}{r} 89 \overline{) 4356} \\ \underline{-356} \\ 796 \\ \underline{-712} \\ 84 \end{array}$$

How many times 89 goes into 796? 8 times
 $8 \times 89 = 712$

48.9

$$\begin{array}{r} 89 \overline{) 4356} \\ \underline{-356} \\ 796 \\ \underline{-712} \\ 840 \\ \underline{-801} \\ 39 \end{array}$$

Bring down a 0 next to 84. Put a point next to 48. How many times 89 can go into 840? 9 times. $9 \times 89 = 801$

7. GCF (24, 76)

Factors of 24 are 1, 2, 3, **4**, 6, 8, 12, and 24

Factors of 76 are 1, 2, **4**, 19, 38, and 76

The greatest common factor is 4.

8.

Factors of 12 are 1, 2, 3, 4, 6, and **12**

Factors of 36 are 1, 2, 3, 4, 6, 9, **12**, 18, and 36.

The greatest common factor is 12.

9. Prime number have only two factors.

2, 5, 13, and 17 are prime.

93 and 117 look prime, but they are not.

93 have more than 2 factors: 1, 3, 31, 93

117 have more than 2 factors: 1 3 9 13 39 117

10. $\frac{2}{3} > \frac{3}{5}$ and $\frac{6}{15} < \frac{3}{7}$

To see this, get the same denominator

$$\frac{2}{3}$$

$$\frac{3}{5}$$

$$\frac{6}{15}$$

$$\frac{3}{7}$$

$$\frac{10}{15}$$

$$\frac{9}{15}$$

$$\frac{42}{105}$$

$$\frac{45}{105}$$

$$10 > 9$$

$$42 < 45$$

11.

$$\frac{1}{3} + \frac{5}{4} = \frac{4}{12} + \frac{15}{12} = \frac{19}{12}$$

$$\frac{6}{2} + \frac{3}{4} = \frac{12}{4} + \frac{3}{4} = \frac{15}{4}$$

12.

5.43123 5.43013

Going from left to right, compare each pair of numbers located in the same position.

The first three numbers are 5, 4, 3 and they are equal. The numbers located in the fourth positions are 1 and 0. Since 1 bigger than 0, 5.431 is the bigger number.

13.

$$\text{Perimeter} = 2 \times L + 2 \times W = 2 \times 5 + 2 \times 7 = 10 + 14 = 24 \text{ inches}$$

$$\text{Area} = 5 \times 7 = 35 \text{ square inches}$$

14.

$$35\% \text{ of } 40 = \frac{35}{100} \times \frac{40}{1} = \frac{35 \times 40}{100 \times 1} = \frac{1400}{100} = 14$$

15.

$$80 \times x\% = 100$$

$$80 \times \frac{x}{100} = 100$$

$$\frac{80x}{100} = 100$$

$$\frac{8x}{10} = 100$$

$$8x = 1000$$

$$x = 125$$

So 125% of 80 is 100

$$16. \quad \frac{2}{5} = \frac{2 \times 20}{5 \times 20} = \frac{40}{100} = 40\%$$

17. Two lines are parallel if they never meet.



18.

$$6n + 12 = 6$$

$$6n + 12 - 12 = 6 - 12$$

$$6n = -6$$

$$n = -1$$

19.

$$volume = 3 \times \frac{14}{3} \times \frac{12}{7} = \frac{3}{1} \times \frac{14}{3} \times \frac{12}{7} = \frac{3 \times 14 \times 12}{1 \times 3 \times 7} = \frac{504}{21} = 24$$

20.

Between 5:45 AM and 12:00 PM, there are 6 hours and 15 minutes

Between 12:00 PM and 4:10 PM, there are 4 hours and 10 minutes

$$6 \text{ hours } 15 \text{ minutes} + 4 \text{ hours } 10 \text{ minutes} = 10 \text{ hours } 25 \text{ minutes}$$

21.

Place the protractor correctly on the angles. You should get approximately 115 degrees for the angle on the left and about 25 degrees for the angle on the right.

22.

$$r = \frac{5}{2} = 2.5$$

$$p = 2 \times \pi \times r = 2 \times 3.14 \times 2.5 = 6.28 \times 2.5 = 15.7 \text{ cm}$$

$$A = \pi \times r^2 = 3.14 \times 2.5^2 = 3.14 \times 6.25 = 19.625 \text{ cm}^2$$

23.

$$1 \text{ cm} = 10 \text{ mm, so } 25 \text{ cm} = 25 \times 10 = 250 \text{ mm}$$

$$1 \text{ kg} = 1000 \text{ g, so } 1250 \text{ g} = \frac{1250}{1000} \text{ kg} = 1.25 \text{ kg}$$

$$1 \text{ L} = 1000 \text{ mL, so } 25 \text{ mL} = \frac{25}{1000} \text{ L} = 0.025 \text{ L}$$

24.

$$\begin{array}{r} 25 \text{ m} \quad 14 \text{ s} \\ - 4 \text{ m} \quad 30 \text{ s} \\ \hline \end{array}$$

$$\begin{array}{r} 24 \text{ m} \quad 60 \text{ s} \\ \cancel{25 \text{ m}} \quad 14 \text{ s} \\ - 4 \text{ m} \quad 30 \text{ s} \\ \hline \end{array}$$

$$\begin{array}{r} 24 \text{ m} \quad 74 \text{ s} \\ - 4 \text{ m} \quad 30 \text{ s} \\ \hline 20 \text{ m} \quad 44 \text{ s} \end{array}$$

$$20 \text{ minutes} = 20 \times 60 = 1200 \text{ s and } 1200 \text{ s} + 44 \text{ s} = 1244 \text{ seconds}$$

25.

The ratio is 1: 20. This means $\frac{1}{20}$

In other words, the real length is 20 times bigger. Multiply 10 by 20 to get 200.
The real length is 200 inches

26.

A number is in scientific format when it is written as $a \times 10^n$
A is between 1 and 10, n is any integer.

2300000000

Put the decimal point at the end. Move it to the left 9 places and put it between the 2 and the 3. The counting is shown below. The goal is put the point somewhere so that the number obtained is at least one, but less than 10. Space are used to make this easier to read.

2300000000.

2 3 0 0 0 0 0 0 0 . 0
1

2 3 0 0 0 0 0 0 . 0 0
2

2 3 0 0 0 0 0 . 0 0 0
3

2 3 0 0 0 0 . 0 0 0 0
4

2 3 0 0 0 . 0 0 0 0 0
5

2 3 0 0 . 0 0 0 0 0 0
6

2 3 0 . 0 0 0 0 0 0 0
7

2 3 . 0 0 0 0 0 0 0 0
8

2 . 3 0 0 0 0 0 0 0 0
9

The answer is 2.3×10^9

0.00024

The decimal point is given this time. This time move it to the right, put it between the 2 and the 4, and count how many places you moved it.

If you used the same technique above, you have to move it 4 places to the right. The other difference with the other problem is that since the number is smaller than 1, the exponent is negative.

The answer is 2.4×10^{-4}

27.

1 foot = $\frac{1}{3}$ yard, so 12 feet = $12 \times \frac{1}{3} = \frac{12}{1} \times \frac{1}{3} = \frac{12 \times 1}{1 \times 3} = \frac{12}{3} = 4$ yards.

1 gallon = 8 pints, so 2 gallons is $2 \times 8 = 16$ pints.

28.

When adding numbers, if numbers have the same sign, add and keep the same sign. However, if they have different sign, subtract and keep the sign of the bigger number. Notice that what we mean here by bigger number is the bigger number when we ignore the signs.

$-2 + -6$. Here, same sign, so add 2 and 6 to get 8 and keep the negative sign.
The answer is -8 .

$-4 + 3$. Here, different sign, subtract and keep the sign of the bigger number.

$4 - 3 = 1$. Since the bigger number when ignoring the sign is 4, keep the negative

The answer is -1

$5 - -2$

As a rule of thumb, $-- = ++$, $5 - -2 = 5 ++ 2 = 7$

29.

When multiplying or dividing integers, if the signs are the same, it is equal to a positive. However, if the signs are different, it is equal to a negative.

$$-2 \times 4.$$

The signs are different, so $-2 \times 4 = -8$.

$$-6 \div -2$$

The signs are the same so, $-6 \div -2 = +3$

30.

The absolute value of a number is the distance that number is from 0.

Since there are 3 spaces between 0 and -3 , absolute value of -3 is 3.