Seventh grade math test solution

1.

a. $3^{6} \times 3^{-14} =$

A. 3^{20} **B.** 3^{14} **C.** 3^{-8} **D.** 3^{8}

To get the answer, all you need to do is to add the exponents (The exponents are 6 and -14).

You can only add the exponents when the base is the same. In this case, the base is 3, so it is the same.

6 + -14 = -8

$3^{6} \times 3^{-14} = 3^{-8}$

2.

|8 - 3| - | 5 - 12| =

A. -2 **B.** 2 **C.** 0 **D.** 5

|8 - 3| - | 5 - 12| = | 5| - |-7| = 5 - 7 = -2

The answer is A.

3.

a. 200000000000 in scientific notation is

A. 2 × 10^{-11} **B.** 2 × 3^{11} **C.** 2 × 10^{12} **D.** 2 × 10^{11}

b. 4 × 10^{-6} in standard notation is

A. 0.004 **B.** 0.000042 **C.** 0.000004 **D.** 0.00004

To change 200000000000 into scientific notation, move the decimal point to the left to put it between 2 and 0. The number of moves is your exponent. The exponent is positive if you move to the left and negative otherwise.

The base is the number you get when the decimal point is between 2 and 0 or 2.0

200000000000 = 200000000000.

20000000000.0 1 move

2000000000.00 2 moves

200000000.000 3 moves

20000000.0000 4 moves

2000000.00000 5 moves

200000.000000 6 moves

20000.0000000 7 moves

2000.00000000 8 moves

200.000000000 9 moves

20.0000000000 10 moves

2.00000000000 11 moves

200000000000 = 2 × 10^{-11}

b. 4 × 10^{-6} = 0.000004

If you start with 0.000004, you need to move the point 6 places to the right

4.

a. Which number is irrational?

A. $\sqrt{(49)}$ **B.** 1/3 **C.** $\sqrt{(6)}$ **D.** 0

b. If x = 4, 6 √(x) = _____

Rational means that the number can be written as a fraction.

Clearly then 0 = $\frac{0}{5}$ and $\frac{1}{3}$ are rational numbers

$\sqrt{(49)}$ = 7 since 7×7 = 49 and 7 = $\frac{7}{1}$

The number that is irrational is $\sqrt{(6)}$

b. If x = 4, 6 √(x) = $6 \times \sqrt{(4)}$ = 6×2 = 12

5.

a. Which property is illustrated below?

x × (2 + 5) = x × 2 + x × 5

A. commutative property of addition **B.** Distributive property **C.** Distributive property of multiplication **D.** Multiplicative inverse

b. (122 + x)× 1 = 122 + x is an example of

A. Identity property **B.** Distribtive property of multiplication **C.** Identity property of addition **D.** Identity property of multiplication

a. Both B and C are correct answers

b. (122 + x) × 1 = 122 + x is an example of identify property of multiplication.

If you say identity property, then the answer is not specific.

6.

You buy a computer for 500 USD. There is a 20% discount and a 6% sales tax. How much money to you pay? _____

Discount = 500×20 % = $500 \times (\frac{20}{100})$ = $\frac{10000}{100}$ = 100

There is another way to solve the problem

20% means 20 per 100

20 per 100

40 per 200

60 per 300

80 per 400

100 per 500

Discounted price = 500 – 100 = 400

Tax is 6%. this means that for every 100 dollars you pay 6 dollars.

Since you pay 400 = 100 + 100 + 100 + 100, you pay 6 + 6 + 6 + 6 = 24 dollars in tax

Therefore, you pay a total of 424 dollars

7.

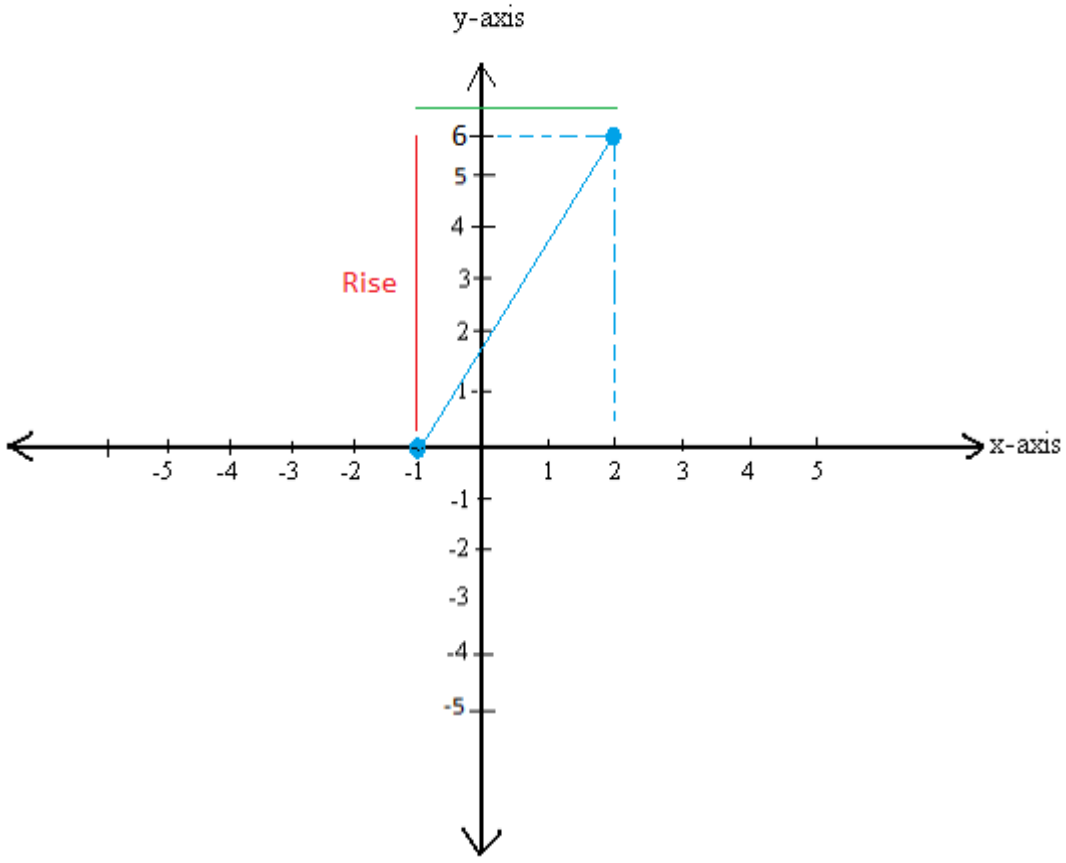
If x = 2 and y = 5, the value of x^2 y + 4x =

A. 28 **B.** -5 **C.** 20 **D.** 62

x^2 y + 4x = $2^2 \times 5$ + 4×2 = $4 \times 5 + 4 \times 2$ = 20 + 8 = 28

8.

Graph (2, 6) and (-1, 0) on the coordinate system and find the slope using m = rise / run



The rise is shown with the red line. Just count the units to get 6

The run is shown with the green line. Again, just count the units to get 3

Slope = $\frac{6}{3}=2$

9.

Throw a coin twice.

a. Show all different outcomes

b. What is the probability of getting heads twice? _____

Let H represents heads and let T represents tails

The outcomes are HH, TT, HT, or TH (4 outcomes).

The only outcome that shows heads twice is HH (1 outcome)

Probability of getting heads twice = $\frac{1}{4}$

10.

Find the inequality below and then solve it _____

x + 5 = 2

2 + 0 = 2

3x + 2 > 11

4x + 9

The inequality is the one that has an inequality sign or 3x + 2 > 11

3x + 2 > 11

3x + 2 – 2 > 11 – 2

3x + 0 > 9

$\frac{3x}{3} > \frac{9}{3}$

x > 3

11.

David buys a computer that cost 288 dollars. The manager decided to deduct one-fourth (1/4) of the sales price

Which expression is an approximation of what David pays after the deduction?

A. 300 × 0.25 **B.** 300 × 0.025 **C.** 300 - 300 × 0.25 **D.** 300 + 300 × 0.25

$\frac{1}{4}$ = 0.25

Deduction is 300×0.25

What David pays = 300 – 300×0.25

12.

Simplify ($2^5 \times 4^{10} \times 6^5$) / ($2^3 \times 4^{10} \times 6^6$)

A. $\frac{4}{8}$ **B.** $\frac{1}{3}$ **C.** 1 **D.** $\frac{2}{3}$

($2^5 \times 4^{10} \times 6^5$) / ($2^3 \times 4^{10} \times 6^6$)

$2^5 \times 4^{10} \times 6^5$ / $2^3 \times 4^{10} \times 6^6$

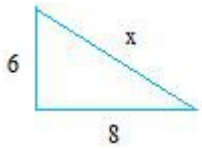
= $\frac{2^5}{2^3} \times \frac{4^{10}}{4^{10}} \times \frac{6^5}{6^6}$

= $2^{(5-3)} \times 1 \times 6^{(5-6)}$

= $2^2 \times 1 \times 6^{(-1)}$

= $2^2 \times 6^{-1}$

13. Find the length of x _____



Here, we must use the pythagorean to solve for x

$x^2 = 6^2 + 8^2$

$x^2 = 36 + 64$

$x^2 = 100$

Since $10^2 = 10 \times 10 = 100$, x = 10

14.

Put the following equation in slope-intercept form. Then identify the slope and they-intercept

5 + y = 4x

Slope-intercept form _____

Slope _____

y-intercept _____

To write 5 + y = 4x in slope-intercept form, just solve for y

5 + y = 4x

5 – 5 + y = 4x – 5

0 + y = 4x – 5

y = 4x - 5

The slope intercept form is y = mx + b where m = slope and b = y-intercept

y = 4x - 5 = 4x + -5

y = mx + b

y = 4x + -5 is the slope-intercept form

The slope or m is the number on the left of x, so m = 4

b = -5, so y-intercept = -5

15. x% of 120 is 36. What is x? _____

Write x% of 120 is 36 as a math equation.

x% of 120 is 36 = $\frac{x}{100}$ × 120 = 36

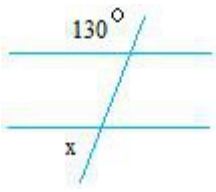
$\frac{120x}{100}$ = 36

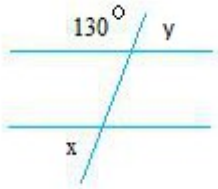
1.2 x = 36

$\frac{1.2x}{1.2} = \frac{36}{1.2}$

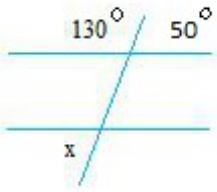
x = 30

16. What is the measure of angle x? _____





130 + y = 180. Since 130 + 50 = 180, y = 50 degrees



We know that alternate exterior angle are equal.

Angle x is equal to the angle that is 50 degrees as alternate exterior angle

x = 50 degrees

17.

A box has the following dimenssions

length = 6 cm, width = 8 cm, and height = 3 cm

The volume and surface area are :

A. V = 144 cm^3 and SA = 180 cm^2 **B.** V = 144 cm^3 and SA = 110 cm^2

C. V = 120 cm^3 and SA = 180 cm^2 **D.** V = 164 cm^3 and SA = 174 cm^2

V = $length \times width \times height$ = $6 \times 8 \times 3$ = 48×3 = 144

V = 144 cm^3

SA = $2 \times length \times width$ + $2 \times length \times height$ + $2 \times width \times height$

SA = $2 \times 6 \times 8$ + $2 \times 6 \times 3$ + $2 \times 8 \times 3$

SA = 2×48 + 2×18 + 2×24

SA = 96 + 36 + 48

SA = 180 cm^3

The answer is A.

18.

Solve for x.

-4x + 5 = 29

-4x + 5 - 5 = 29 – 5

-4x + 0 = 24

-4x = 24

$$\frac{-4x}{-4} = \frac{24}{-4}$$

x = -6

19.

If you car can take you 85 miles away with 5 gallons of gas. How many gallons do you need to go 2035 miles away?

If 5 gallons gives you 85 miles

x gallons gives you 2035 miles

Set up a proportion

5 _____ 85

x _____2035

$$\frac{5}{x} = \frac{85}{2035}$$

Cross multiply

$$5 \times 2035 = x \times 85$$

$$10175 = x \times 85$$

$$\frac{10175}{85} = \frac{(x \times 85)}{85}$$

x = 119.70 = almost 120 gallons

20.

The sum of two consecutive even numbers is 42. What are the two numbers? (Hint: Let the numbers be 2n and 2n +2)

Let 2x be the first even integer. Let 2x + 2 be the next even integer

2x + 2x + 2 = 42

4x + 2 = 42

4x + 2 – 2 = 42 – 2

4x + 0 = 40

4x = 40

x = 10

The first even integer is 2x = 20 and the second is 20 + 2 = 22

Indeed 20 + 22 = 42