

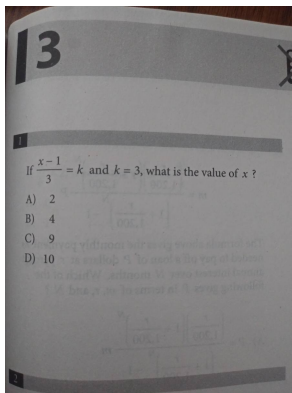
5.

## Practice Test 1

Let's start looking at some problems together

- 1) You will try the problem on your own
- 2) Then, I will go over each problem after the time is up or everyone has answered.
- 3) Turn to page 1229 in your SAT book

6.



1. If  $\frac{x-1}{3} = k$  and  $k = 3$ , what is the value of  $x$ ?

A) 2

B) 4

C) 9

D) 10

7.

## Answer and Explanation on pg 1292

Since  $k=3$ , one can substitute 3 for  $k$ , which gives  $\frac{x-1}{3} = 3$ .

Multiplying both sides by 3 gives  $3 \cdot \frac{x-1}{3} = 3 \cdot 3$  which is  $x-1 = 9$ . Adding 1 to both sides we see  $x=10$ .

8. 2. For  $i = \sqrt{-1}$ , what is the sum  $(7 + 3i) + (-8 + 9i)$ ?

(A)  $15 - 6i$

(B)  $15 + 12i$

(C)  $-1 + 12i$

(D)  $-1 - 6i$

9.

## Answer and Explanation on pg 1292

Combine like terms to solve this problem, paying careful attention to the signs in front of each number and the sign in between the parentheses which is +. So we add  $7 + -8 = -1$  and then add the imaginary numbers,  $3i + 9i = 12i$ . The result is  $-1 + 12i$ .



13.

## Answer and Explanation on pg 1293

Equations in slope-intercept form have the form  $y = mx + b$ , where  $m$  is the slope and  $b$  is the  $y$ -intercept. This equation is in this form but reversed,  $y = b + mx$ . This means in the equation  $P = 108 - 23d$ , 108 represents the  $y$ -intercept. The  $y$ -intercept represents the "starting point" of an equation so 108 represents the number of phones Kathy needs to repair at the start of the week. The slope would be  $-23$  which represents the decrease in the number of phones needed to repair at the end of each day.

14. 5.  $(x^2y - 3y^2 + 5xy^2) - (-x^2y + 3xy^2 - 3y^2)$

(A)  $(B) 8xy^2 - 6y^2$

(B)  $(C) 2x^2y + 2xy^2$

(C)  $(A) 4x^2y^2$

(D)  $(D) 2x^2y + 8xy^2 - 6y^2$

15.

## Answer and Explanation on pg 1293

Only like terms, with the same variables and exponents, can be combined to determine the answer as shown here:

$$\begin{aligned} & (x^2y - 3y^2 + 5xy^2) - (-x^2y + 3xy^2 - 3y^2) \\ &= (x^2y - (-x^2y)) + (-3y^2 - (-3y^2)) + (5xy^2 - 3xy^2) \\ &= 2x^2y + 0 + 2xy^2 \\ &= 2x^2y + 2xy^2 \end{aligned}$$

\*\*\* Remember subtracting a negative changes to adding a positive!!

16. 6.)  $h = 3a + 28.6$

A pediatrician uses the model above to estimate the height  $h$  of a boy, in inches, in terms of the boy's age  $a$ , in years, between the ages of 2 and 5. Based on the model, what is the estimated increase, in inches, of a boy's height each year?

A) C) 9.5

B) A) 3

C) B) 5.7

D) D) 14.3

17.

## Answer and Explanation on pg 1293

Equations in slope-intercept form have the form  $y = mx + b$ , where  $m$  is the slope and  $b$  is the  $y$ -intercept. This equation is in this form. This means in the equation  $h = 3a + 28.6$ , 3 represents the slope and 28.6 represents the  $y$ -intercept. Remember slope also means rate of change so the rate of increase of the boy's height each year is 3. The height of the boy at age 2 started at 28.6 inches.

18.

7.  $m = \frac{\left(\frac{r}{1,200}\right) \left(1 + \frac{r}{1,200}\right)^N}{\left(1 + \frac{r}{1,200}\right)^N - 1} P$  ..... The formula

above gives the monthly payment needed to pay off a loan of  $P$  dollars at  $r$  percent annual interest over  $N$  months. Which of the following gives  $P$  in terms of  $m$ ,  $r$  and  $N$ ?

A)  $P = \frac{\left(1 + \frac{r}{1,200}\right)^N - 1}{\left(\frac{r}{1,200}\right) \left(1 + \frac{r}{1,200}\right)^N} m$

B)  $P = \left(\frac{r}{1,200}\right) m$

C)  $P = \frac{\left(\frac{r}{1,200}\right) \left(1 + \frac{r}{1,200}\right)^N}{\left(1 + \frac{r}{1,200}\right)^N - 1} m$

D)  $P = \left(\frac{1,200}{r}\right) m$

19.

## Answer and Explanation on pg 1294

This problem is meant to make you think that it is an ultra-complicated problem when in fact it is not. Since we are solving for P, and P is being multiplied by the fraction on the right side of the equation, to get rid of the fraction we need to multiply both sides by the reciprocal of the fraction (flipped upside down). So, we are multiplying m on the left side

$$\text{by } \frac{\left(1 + \frac{r}{1,200}\right)^N - 1}{\left(\frac{r}{1,200}\right) \left(1 + \frac{r}{1,200}\right)^N} \text{ making the answer B.}$$

20.

If  $\frac{a}{b} = 2$ , what is the value of  $\frac{4b}{a}$ ?

A 0

B 4

C 1

D 2

21.

## Answer and Explanation on pg 1294

The easiest way to solve this problem is to pick values for a and b so that  $\frac{a}{b} = 2$ . For this case, I am going to say a = 4 and b = 2. So if a = 4 and b = 2, plugging into the second equation we get

$$\frac{4(2)}{4} = \frac{8}{4} = 2$$

22. 9.

$$3x + 4y = -23$$

$$2y - x = -19$$

What is the solution  $(x,y)$  to the system of equations above?

 A D) (9, -6) B C) (4, -6) C A) (-5, -2) D B) (3, -8)

23.

## Answer and Explanation on pg 1294

Adding  $x$  and  $19$  to both sides of  $2y - x = -19$  gives  $x = 2y + 19$ . Then, substituting  $2y + 19$  for  $x$  in  $3x + 4y = -23$  gives  $3(2y + 19) + 4y = -23$ .

After using the distributive property we get  $6y + 57 + 4y = -23$ .

Combining like terms we get  $10y + 57 = -23$ . Subtracting  $57$  to both sides we get  $10y = -80$  and dividing both sides by  $10$  we see  $y = -8$ .

Finally, substituting  $-8$  for  $y$  in  $2y - x = -19$  we see  $2(-8) - x = -19$ . Then,  $-16 - x = -19$  so adding to both sides we get  $-x = -3$ . Dividing both sides by  $-1$  we see  $x = 3$  so the solution is  $(3, -8)$ .

24.  $g(x) = ax^2 + 24$ 

Using the function  $g$  defined above,  $a$  is constant and  $g(4) = 8$ . What is the value of  $g(-4)$ ?

 A D) -8 B A) 8 C C) -1 D B) 0

25.

## Answer and Explanation on pg 1294

If  $g(x) = ax^2 + 24$  and  $g(4) = 8$ , the 4 in  $g(4)$  is in  $x$ 's place, so we plug it in for  $x$ . So, we get  $a(4)^2 + 24 = 8$  because  $g(4) = 8$ . Then,  $16a + 24 = 8$ , so solving for  $a$ , we subtract 24 to both sides and get  $16a = -16$ . Dividing by 16 to both sides  $a = -1$ . Now, we take the fact that  $a = -1$  and plug it into the equation when we have  $g(-4)$ . This gives us  $-1(-4)^2 + 24 = -1(16) + 24 = -16 + 24 = 8$ .