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

1. If $\frac{x-1}{3}=k$ and $k=3$, what is the value of $x$ ?
A
C) 9
B
A) 2
C
B) 4
D D) 10

# Answer and Explanation on pg 1292 

Since $\mathrm{k}=3$, 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 $\mathrm{x}=10$.
8.
2. For $i=\sqrt{-1}$, what is the sum $(7+3 i)+(-8+9 i)$ ?
A
(D) $15-6 i$
B $(C) 15+12 i$
C
(A) $-1+12 i$
D $\quad(B)-1-6 i$
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, $3 i+9 i=12 i$. The result is $-1+12 i$.
10. 3. On Saturday afternoon, Armand sent $m$ text messages each hour for 5 hours, and Tyrone sent $p$ text messages each hour for 4 hours. Which of the following represents the total number of messages sent by Armand and Tyrone on Saturday afternoon?
A) 9 mp
B
D) $4 m+5 p$
C) $5 m+4 p$
D
B) 20 mp
11.

## Answer and Explanation on pg 1292

To find how many text messages Armand sends, you would multiply the number of texts he send per hour by how many hours he sent texts, so m texts $/ \mathrm{hr} \times 5$ hours $=5 \mathrm{~m}$ texts. The same would be true for Tyrone so you would multiply $p$ texts $/ \mathrm{hr} \times 4$ hours $=4 p$ texts. So, together they send $5 m+4 p$ texts because you cannot combine them because they have unlike variables.
12. 4. Kathy is a repair technician for a phone company. Each week, she recieves a batch of phones that need repairs. The number of phones that she has left to fix at the end of the day can be estimated with the equation $P=108-23 d$ where $P$ is the number of phones left and $d$ is the number of days she has worked that week. What is the meaning of the value 108 in this equation?

Kathy repairs phones at a rate of 108 per hour.

Kathy repairs phones at a rate of 108 per day.

Kathy starts each week with 108 phones to fix.

Kathy will complete the repairs within 108 days.
13.

## Answer and Explanation on pg 1293

Equations in slope-intercept form have the form $y=m x+b$, where $m$ is the slope and $b$ is the $y$-intercept. This equation is in this form but reversed, $y=b+m x$. This means in the equation $P=108-23 d, 108$ 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. $\left(x^{2} y-3 y^{2}+5 x y^{2}\right)-\left(-x^{2} y+3 x y^{2}-3 y^{2}\right)$
(B) $8 x y^{2}-6 y^{2}$

B $\quad(C) 2 x^{2} y+2 x y^{2}$

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

D (D) $2 x^{2} y+8 x y^{2}-6 y^{2}$
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:

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

*** Remember subtracting a negative changes to adding a positive!!
16. 6 .) $h=3 a+28.6$

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?
C) 9.5
B) 5.7
D) 14.3 B A) 3

## Answer and Explanation on pg 1293

Equations in slope-intercept form have the form $y=m x+b$, where $m$ is the slope and $b$ is the $y$-intercept. This equation is in this form. This means in the equation $h=3 a+28.6,3$ 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. $m=\frac{\left(\frac{r}{1,200}\right)\left(1+\frac{r}{1,200}\right)^{N}}{\left(1+\frac{r}{1,200}\right)^{N}-1} P$
17.
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 $\quad P=\left(\frac{r}{1,200}\right) m$

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 $\quad P=\left(\frac{1,200}{r}\right) m$
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 by $\frac{\left(1+\frac{r}{1,200}\right)^{N}-1}{\left(\frac{r}{1,200}\right)\left(1+\frac{r}{1,200}\right)^{N}}$ making the answer B.
20.

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



B 4
C 1
D 2
21.

## Answer and Explanation on pg 1294

The easiest was 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 $\mathrm{a}=4$ and $\mathrm{be}=2$. So if a $=4$ and $b=2$, plugging into the second equation we get $\frac{4(2)}{4}=\frac{8}{4}=2$
22. 9.

$$
\begin{aligned}
& 3 x+4 y=-23 \\
& 2 y-x=-19
\end{aligned}
$$

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 $2 y-x=-19$ gives $x=2 y+19$. Then, substituting $2 y+19$ for $x$ in $3 x+4 y=-23$ gives $3(2 y+19)+4 y=-23$. After using the distributive property we get $6 y+57+4 y=-23$.
Combining like terms we get $10 y+57=-23$. Subtracting 57 to both sides we get $10 y=-80$ and dividing both sides by 10 we see $y=-8$.
Finally, substituting -8 for $y$ in $2 y-x=-19$ 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. $g(x)=a x^{2}+24$

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

## Answer and Explanation on pg 1294

If $g(x)=a x^{2}+24$ and $g(4)=8$, the 4 in $g(4)$ is in $x^{\prime}$ s place, so we plug it in for x . So, we get $a(4)^{2}+24=8$ because $\mathrm{g}(4)=8$. Then, $16 a+24=8$, so solving for $a$, we subtract 24 to both sides and get $16 a=$ -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 $\mathrm{g}(-4)$. This gives us $-1(-4)^{2}+24=-1(16)+24=-16+24=8$.

