

→ 1:15 per problem
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NC Set #1 Part A

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

- A) 2
- B) 4
- C) 9
- D) 10

$$\frac{x-1}{3} = 3 =$$

$$x-1 = 9$$

$$x = 10$$

2.

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

The formula above gives the monthly payment m 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) $P = \frac{\left(\frac{r}{1,200}\right)\left(1 + \frac{r}{1,200}\right)^N m}{\left(1 + \frac{r}{1,200}\right)^N - 1}$

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

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

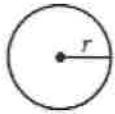
D) $P = \left(\frac{1,200}{r}\right) m$

$$m = \frac{(x)(y)}{(z)} P$$

can't divide by fraction
multiply both sides reciprocal

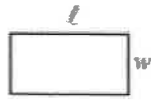
$$\frac{z}{(x)(y)} = P$$

SAT Math Formula Sheet

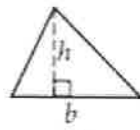


$$A = \pi r^2$$

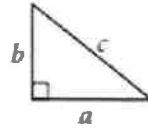
$$C = 2\pi r$$



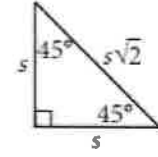
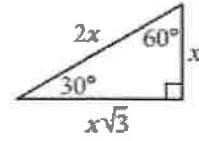
$$A = \ell w$$



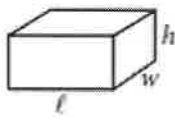
$$A = \frac{1}{2}bh$$



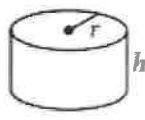
$$c^2 = a^2 + b^2$$



Special Right Triangles



$$V = \ell wh$$



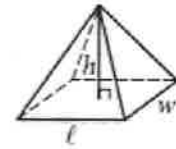
$$V = \pi r^2 h$$



$$V = \frac{4}{3}\pi r^3$$



$$V = \frac{1}{3}\pi r^2 h$$



$$V = \frac{1}{3}\ell wh$$

The number of degrees of arc in a circle is 360.

The number of radians of arc in a circle is 2π .

The sum of the measures in degrees of the angles of a triangle is 180.

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

- (A) $-1 + 12i$
- B) $-1 - 6i$
- C) $15 + 12i$
- D) $15 - 6i$

4. If $t > 0$ and $t^2 - 4 = 0$, what is the value of t ?

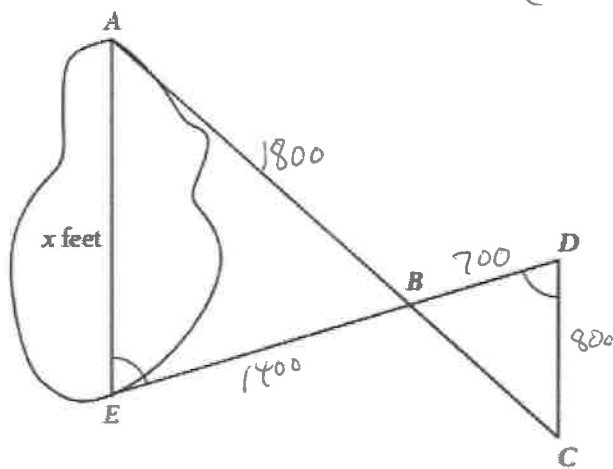
$$t^2 - 4 = 0$$

$$(t + 2)(t - 2) = 0$$

$$t = \pm 2$$

only + so 2

5.



A summer camp counselor wants to find a length, x , in feet, across a lake as represented in the sketch above. The lengths represented by AB , EB , BD , and CD on the sketch were determined to be 1800 feet, 1400 feet, 700 feet, and 800 feet, respectively. Segments AC and DE intersect at B , and $\angle AEB$ and $\angle CDB$ have the same measure. What is the value of x ?

$$\frac{700}{1400} = \frac{800}{x}$$

$$700x = 1,120,000$$

$$x = 1600 \text{ feet}$$

NC Set #1A Key

1. D

2. B

3. A

4. 2

5. 1600

NC Set #1 Part B

1. Kathy is a repair technician for a phone company. Each week, she receives a batch of phones that need repairs. The number of phones that she has left to fix at the end of each day can be estimated with the equation $P = 108 - 23d$, 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?

- A) Kathy will complete the repairs within 108 days.
B) Kathy starts each week with 108 phones to fix.
C) Kathy repairs phones at a rate of 108 per hour.
D) Kathy repairs phones at a rate of 108 per day.

2. 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) $9mp$
B) $20mp$
C) $5m + 4p$
D) $4m + 5p$

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

- A) 0
B) 1
C) 2
D) 4

$$\frac{a}{b} = 2 \quad \text{so} \quad \frac{a}{b} = \frac{2}{1} \quad a=2, b=1$$

$$\frac{4b}{a} = \frac{4(1)}{2} = 2$$

4.

$$\begin{aligned} x + y &= -9 \\ -(x + 2y &= -25) \end{aligned}$$

According to the system of equations above, what is the value of x ?

$$\begin{aligned} x + y &= -9 \\ -x - 2y &= 25 \\ \hline -y &= 16 \\ y &= -16 \\ x - 16 &= -9 \\ x &= 7 \end{aligned}$$

5. If the quadratic equation $ax^2 + 2x - 5 = 0$ has one real solution, what is the value of a ?

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$b^2 - 4ac > 0 \text{ real solution}$$

$$(2)^2 - 4(a)(-5) > 0$$

$$4 + 20a > 0$$

$$20a > -4$$

$$a > \frac{-4}{20} = -\frac{1}{5}$$

$$a > -\frac{1}{5}$$

NC Set # Part B Key

1. B

2. C

3. C

4. 7

5. $-\frac{1}{5}$

NC Set #1 Part C

1. If $\frac{x}{y} = -2$, what is $\frac{y}{4x}$?

A) $\frac{1}{2}$

B) $-\frac{1}{2}$

C) $-\frac{1}{4}$

D) $-\frac{1}{8}$

$$\frac{x}{y} = -2 \text{ so } \frac{x}{y} = \frac{-2}{1} \quad x = -2, y = 1$$

$$\frac{y}{4x} = \frac{1}{4(-2)} = -\frac{1}{8}$$

2. Oscar has purchased a new cell phone plan and the monthly cost of his bill in dollars, C , is calculated based on the amount of data he uses, x , in kilobytes, according to the following equation:

$$C = 20 + 0.05k$$

What does the 0.05 stand for in the equation?

A) Oscar owes \$0.05 per month

B) Each dollar pays for 0.05 kilobytes of data

C) Each additional kilobyte of data costs \$0.05

D) The bill will always be at least \$20, no matter how much data is used.

3. If $i = \sqrt{-1}$, find the difference $(4i - 7) - (7i - 3)$.

A) $3i + 10$

B) $3i - 4$

C) $-3i - 10$

D) $-3i - 4$

4. If $x < 0$ and $x^2 - 4x - 5 = 0$, what is the value of x ?

$$(x-5)(x+1) = 0$$

$$x = \cancel{5}, -1$$

$$\boxed{-1}$$

For the system of equations below, what is the value of n ?

$$5. \begin{cases} 2m - 3n = 4 \\ 6m + n = 32 \end{cases}$$

$$-6m + 9n = -12$$

$$6m + n = 32$$

$$10n = 20$$

$$\boxed{n = 2}$$

NC Set # 1 Part C Key

1. D

2. C

3. D

4. -1

5. 2