COLLEGE READINESS INITIATIVE

Test One: Math, No Calculator
Additional Problems

Once you have read through the test marked Test One: Math, No Calculator and understand the solutions, complete the following practice test to reinforce what you have just learned. Good luck!

Question 1

If $\frac{2x-7}{5} = k$ and $k = 7$, what is the value of x?

A) 84
B) 24
C) 42
D) 21

Question 2

for $i = \sqrt{-1}$, what is the sum of $(7 - 2i) - (2 + 3i)$?

A) $9 - 5i$
B) $9 + i$
C) $5 - 5i$
D) $5 + i$

Question 3

Last Tuesday, Alex sent $2m$ text messages per hour for 4 hours and Evan sent $3t$ text messages per hour for 5 hours. If Pedro sends double the text messages per hour as both Alex and Evan combined, how many texts does Pedro send in 3 hours?

A) $3m + 4.5t$
B) $6m + 9t$
C) $4m + 6t$
D) $12m + 18t$

Question 4

Nicole repairs laptops for an electronics company. Each week she is assigned a certain amount of laptops that need to be repaired. The number of laptops she has left to fix at the end of each day can be estimated with the equation L=24-6d, where L is the number of laptops left and d is the number of days she has worked that week. If Nicole has worked 1 day, how many laptops has she fixed by the end of the day?

A) 6 laptops
B) 24 laptops
C) 12 laptops
D) 18 laptops

Written by Nicole D'Onofrio

Question 5

$$(2xy^2 + zx^3 - 8zx^2) - (-2zx^3 + 3xy^2 - 2z4x^2)$$

Which of the following is equal to the expression above?

A) $5xy^2 - zx^3 - 16zx^2$
B) $-xy^2 - zx^3 - 16zx^2$
C) $-xy^2 + 3zx^3$
D) $xy^2 - 3zx^3$

Question 6

$$h(t) = 3t + 20$$

A pediatrician uses the above equation to model the average growth of newborn girls from the time they're born to the age of 3. If the variable t represents 6 months, how tall is the average girl when she is 2 years old?

A) 26 inches
B) 29 inches
C) 35 inches
D) 32 inches

Question 7

$$j = \frac{\left(\frac{2x}{3y-200}\right)\left(\frac{3y}{4x}\right)^{2x}}{\left(\frac{y}{1200}\right)^{y-1}\left(\frac{2x}{15}\right)^{x}} z$$

The above equation is completely made up
And represents absolutely nothing.
Which of the following gives z in terms of
j, x, and y?

A) $z = \frac{\left(\frac{y}{1200}\right)^{y-1}\left(\frac{3y}{4x}\right)^{2x}}{\left(\frac{2x}{3y-200}\right)\left(\frac{2x}{15}\right)^{x}} j$

B) $z = \frac{\left(\frac{y}{1200}\right)^{y-1}\left(\frac{2x}{15}\right)^{x}}{\left(\frac{2x}{3y-200}\right)\left(\frac{3y}{4x}\right)^{2x}} j$

C) $z = \frac{\left(\frac{y}{1200}\right)^{y-1}}{\left(\frac{2x}{15}\right)^{x}\left(\frac{2x}{3y-200}\right)\left(\frac{3y}{4x}\right)^{2x}} j$

D) $z = \frac{\left(\frac{2x}{15}\right)^{x}}{\left(\frac{y}{1200}\right)^{y-1}\left(\frac{2x}{3y-200}\right)\left(\frac{3y}{4x}\right)^{2x}} j$

Question 8

If $\frac{x}{y} = 12$, what is the value of $\frac{1}{x} + \frac{1}{y}$

A) 13/12
B) 1/13
C) 2/13
D) 13/24

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Question 9

$4x - 3y = -4$
$y + 2x = 8$

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

A) (4,-2)
B) (1,-2)
C) (2,4)
D) (3,4)

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Question 10

$$g(x) = b\,x^4 + 16$$

For the function g defined above, a is a constant and g(2) = 48. What is the value of g(-2) ?

A) 48
B) -4
C) 0
D) -48

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Question 11

$$a = 4.25 + 2x$$
$$p = 1.05 + 12x$$

In the equations above, a and p represent the price per pound, in dollars, of apples and pears, respectively, x weeks after August 1 during last summer. What was the price per pound of apples when it was equal to the price per pound of pears?

A) $59.75
B) $68.25
C) $32.00
D) $36.25

Written by Nicole D'Onofrio

Question 12

A line in the xy-plane passes through the origin and has a slope of 3/4. Which of the following points lies on the line?

A) (0,3)
B) (6,4)
C) (8,6)
D) (8,3)

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Question 13

If $x > 4$, which of the following is equivalent to: $\dfrac{1}{\frac{1}{x+2}+\frac{1}{x+5}}$

A) $\frac{x^2+7x+10}{2x+7}$

B) $\frac{1}{x^2+7x+10}$

C) $\frac{2x+7}{x^2+7x+10}$

D) $x^2 + 7x + 10$

Question 14

If $2x - y = 14$, what is the value of $\frac{9^x}{3^y}$?

A) 3^{14}
B) 3^7
C) 3
D) 3^{28}

Question 15

If $(ax + 3)(bx + 6) = 6x^2 + cx + 18$ for all values of x, and $a + b = 5$, what are the two possible values for c?

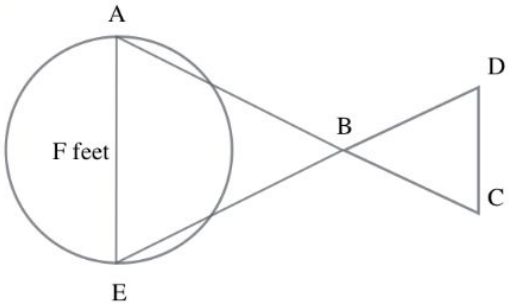
A) 21,24
B) 18,20
C) 25,27
D) The answer cannot be determined

Question 16

If $t < 0$, and if $2t^2 - 2 = 16$, what is the value of t?

Question 17

The circle represented above has a diameter with a length of F feet. The lengths represented by AB, EB, BD, and CD on the sketch were determined to be 24 feet, 18 feet, 9 feet, and 15 feet, respectively. Segments AC and DE intersect at B, and ∠AEB and ∠CDB have the same measure. What is the value of F?



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Question 18

$3y - 5x = 4$
$y + 3x = 6$

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

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Question 19

In a right triangle, one angle measures x^o, where $\cos(x^o) = \frac{5}{13}$. what is the $\sin(x^o)$?

Question 20

If $b = 2\sqrt{3}$ and $2b = \sqrt{3}x$, what is the value of x?

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Great work! Click on the "Additional Problems Key" to score your test. Then redo the problems that you scored incorrectly.