

Summer Math Review 2017

For Section 10 Honors

- You should not use a calculator for this work.
- Work on a separate sheet of paper.
- Show all work.

Section 1 – Short Answer

1. Solve each of the following equations:

i. $2(3x - 4) - 5(x + 2) = 4$

ii. $|x - 1| = 2$

iii. $\frac{1}{x} + \frac{1}{2x} + \frac{1}{3x} = 1$

iv. $\sqrt{x + 1} + 3 = 5$

v. $\sqrt{2x + 1} - \sqrt{x - 3} = 2$

vi. $\frac{2}{x} = \frac{x}{18}$

vii. $12x^2 - 2x = 0$

viii. $4x^2 - 5x = 6$

ix. $(x + 2)^2 + 2 = -x$

2. Simplify each of the following:

i. $\sqrt{72}$

ii. $\sqrt{18} \cdot \sqrt{24}$

iii. $\sqrt{5} + \sqrt{125}$

3. There are b boys in a class. This is 4 fewer than three times the number of girls. How many girls are there?

4. Find the slope of the graph of each of the following lines:

i. $y = 2x - 8$

ii. $2x + 4y - 7 = 0$

5. Find the slope of the line through each pair of points:

i. $(5, 1)$ and $(2, 7)$

ii. $(-\frac{1}{2}, -2)$ and $(-\frac{3}{2}, 1)$

iii. $(2, -4)$ and $(2, 6)$

6. Find the equation of each line, using the given information:

i. slope 5, containing the point $(3, 2)$

ii. containing the points $(0, 2)$ and $(2, 0)$

iii. parallel to $2x + 3y = 7$, containing the point $(-1, 1)$

7. Solve the system consisting of the equations $y = 3 - 2x$ and $2x - y = 5$.

8. Find where the graphs of $2x + 7y = 12$ and $2x + 3y = 4$ intersect.

9. Why does trying to solve the system of equations $y = 3x - 5$ and $6x - 2y = 9$ yield no solutions?

Section 2 – Multiple Choice

1. If $a = 0$ and $b \neq 0$, what is the value of $\frac{a}{b} + \frac{a-1}{b} + \frac{a+1}{b}$?
A 3 **B** 2 **C** 1 **D** $\frac{1}{2}$ **E** 0
2. If $a - b = 80$ and $\frac{3}{5} = \frac{b}{a}$, what is the value of a ?
A 240 **B** 200 **C** 120 **D** 80 **E** 5
3. If x onions cost a total of r cents, how many onions can be bought for d dollars?
A $\frac{100d}{xr}$ **B** $\frac{r}{100dx}$ **C** $\frac{100r}{dx}$ **D** $\frac{100dx}{r}$ **E** $\frac{dx}{100r}$
4. If the square of a number N ($N \neq 0$) equals g times that number, then what is N in terms of g ?
A $-g^2$ **B** $-g$ **C** g **D** $2g$ **E** g^2
5. If it takes ten men 4 hours to repair a barn, how long would it take 8 men to do the same job?
A 2 hours **B** 5 hours **C** 6 hours **D** 8 hours **E** 10 hours
6. In x years from now, Robert will be k years old. How old was Robert m years ago?
A $x - (k + m)$ **B** $k - x$ **C** $k - x - m$ **D** $x - (k - m)$ **E** $k + m - x$
7. A trip to Europe for a class of N students has a fixed price of x dollars. If 5 students decide not to go, then how much more will it cost each student to take the trip?
A $\frac{x}{5}$ **B** $\frac{x}{N-5}$ **C** $\frac{x}{N} - \frac{x}{5}$ **D** $\frac{x}{N} - \frac{x}{N-5}$ **E** $\frac{x}{N-5} - \frac{x}{N}$
8. If $k^{12} = 36^8$, what is the value of k^9 ?
A $2 \cdot 36^8$ **B** 36^3 **C** 36^6 **D** 36^{16} **E** 36^{20}
9. If $3^x = 10$ then $3^{-3x} =$
A -1000 **B** -27 **C** $\frac{1}{1000}$ **D** $\frac{3}{1000}$ **E** $\frac{3}{20}$
10. The ratio of $a : b$ is 2 : 5 and the ratio $d : b$ is 3 : 2. What is the ratio $a : d$?
A $\frac{6}{25}$ **B** $\frac{4}{15}$ **C** $\frac{3}{5}$ **D** $\frac{2}{3}$ **E** $\frac{3}{2}$
11. The ratio of $a : b$ is 2 : 5 and the ratio $c : d$ is 5 : 2 and the ratio $d : b$ is 3 : 2. What is the ratio $a : c$?
A $\frac{8}{75}$ **B** $\frac{6}{25}$ **C** $\frac{1}{2}$ **D** $\frac{3}{5}$ **E** cannot be determined
12. Dan buys a \$125 dollar chainsaw at a discount of 16%. What did he pay for the saw?
A \$41 **B** \$84 **C** \$105 **D** \$109 **E** \$116.60

13. Shira bought a washing machine for \$798, a 24% discount on the original price. What was the original price?

- A** \$822 **B** \$927.91 **C** \$989.52 **D** \$999 **E** \$1050

14. If $x^2 + y^2 = 18$ and $xy = -4$ then $(x - y)^2 =$

- A** -72 **B** 4 **C** 18 **D** 26 **E** 36

15. The value of the fraction $\frac{\frac{3+5}{4} \cdot \frac{6}{7}}{8}$ can be doubled by doubling which digit?