

**Summer Math Review 2017**  
*For Section 7 Algebra*

- You should **not use a calculator** for this work.
- Work on a separate sheet of paper, except for problems 5 and 10.
- Show all work.

1. Evaluate:

*You may write the answer to part a. as a fraction in lowest terms or as a decimal.*

a.  $\frac{5^2 - 3^2}{1 + 3 \cdot 5}$

b.  $4^3 + 3(3 - 8) \div 5$

2. Evaluate  $8x - 7$  when  $x = -1$ .

3. Solve for  $x$ :

a.  $-10x = 2$

b.  $2x + 8 = -12$

c.  $2\left(\frac{2x}{3} + 1\right) = 16$

d.  $3(3x - 1) = 2(x + 1)$

e.  $-3x < 12$

f.  $2 \leq x + 4 \leq 15$

4. Which is the correct expanded form of  $-2(a - b)$ ? (State the correct answer from the choices.)

- A**      $-2a + b$
- B**      $2ab$
- C**      $-2a + 2b$
- D**      $-2a - 2b$

5. Complete the following input-output table for the rule  $y = 3x - 4$ .

|     |    |     |   |   |    |
|-----|----|-----|---|---|----|
| $x$ | -1 | 0.5 | 0 | 5 | 15 |
| $y$ |    |     |   |   |    |

6. Identify the rule, given the following table of inputs and outputs.

|     |   |   |   |    |    |
|-----|---|---|---|----|----|
| $x$ | 1 | 2 | 3 | 4  | 5  |
| $y$ | 1 | 5 | 9 | 13 | 17 |

7. Identify the rule, given the following table of inputs and outputs.

|     |   |   |    |    |    |
|-----|---|---|----|----|----|
| $x$ | 2 | 4 | 6  | 8  | 10 |
| $y$ | 5 | 8 | 11 | 13 | 17 |

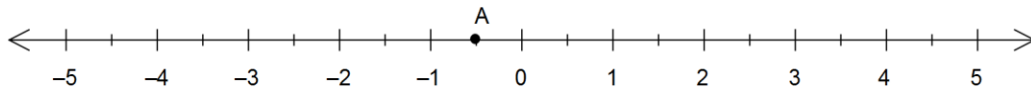
8. These questions are about factors.

- List all the factors of 42 in increasing numerical order.
- Group the factors of 42 into factor pairs.
- Write the prime factorization of 90.
- Find the GCF and LCM of 42 and 90.

9. These questions are about exponents.

- Evaluate  $\left(\frac{1}{4}\right)^2$ .
- Evaluate  $2^5$ .
- What do you need to multiply 3.589 by to get 35890? Write your answer as a power of 10.
- What do you need to multiply 3000 by to get 3? You may write your answer as a decimal or fraction.

10. Consider the following number line.



- What number is represented by the point A?
- Plot  $-3$  on the number line and call this point B.
- Plot  $2\frac{3}{4}$  on the number line and call this point C.
- Will the sum of the coordinates of point B and point C be positive or negative? How do you know?

11. Evaluate the following using fraction operations:

a.  $1\frac{2}{3} + 2\frac{3}{4}$

b.  $2\frac{3}{4} - 1\frac{2}{3}$

c.  $2\frac{3}{4} \cdot 1\frac{2}{3}$

d.  $2\frac{2}{5} \div 1\frac{1}{2}$

12. Evaluate:

a.  $3 \div 0.3$

b.  $1.2 + 3.7$

c.  $1.2 \cdot 3.7$

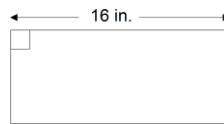
d.  $5.4 - 1.8$

13. Your test scores for this year were 91, 82, 87, 76 and 94.

- i. What was your mean of your test scores?
- ii. What was the median of your test scores?
- iii. What was the mode of the scores?
- iv. What was the range of the scores?
- v. There will be one more test this year. Its score will be counted twice. Is it possible for you to earn a 90 as your final average, and, if so, what minimum score do you need to get on the last test to do so?

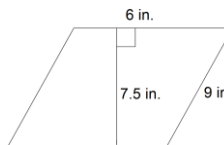
14. These questions are about area.

- a. The rectangle has an area of  $144 \text{ in}^2$ . What is its width?



- b. What are the dimensions of a rectangle with whole number side lengths, the same area and a greater perimeter than that in part a. above?

- c. Find the area of the parallelogram:



- d. A circle has a circumference of  $24\pi \text{ cm}$ .
- i. What is the radius of the circle?
  - ii. What is its exact area?

15. These questions are about finding fractions between fractions, and decimals between decimals.

- a. Give a decimal between 0.69 and 0.7.
- b. Give a fraction between  $\frac{4}{5}$  and  $\frac{5}{6}$ , and write it in lowest terms.

16. These questions are about converting between decimals and fractions.

- a. Write 0.175 as a fraction in lowest terms.
- b. Write 1.375 as an improper fraction in lowest terms.
- c. Write  $\frac{3}{50}$  as a decimal.

17. Write  $\frac{5}{7}$  as an equivalent fraction with a denominator of 630.

18. If I can buy 5 lbs of potatoes for \$3.00, what is the cost per pound?

19. Find the next 2 numbers in the pattern: 87, 81, 75, 69, 63 ... .

20. Find the next 2 numbers in the pattern: 5, 8, 12, 17, 23 ... .

21. Shirts cost \$6 per shirt, plus a \$2 flat fee for shipping the entire order. How many shirts can I buy if I have only \$45 to spend? Will I have any change left over? If so, how much?

22. These questions are about percents.

- a. Find 115% of 120.
- b. 100 is 40% of what number?
- c. You got  $\frac{37}{40}$  on your quiz. What was your score in percent?

23. Gina bought a wrist watch, and then sold it a year later for \$132, which was a 45% decrease on what she bought it for. How much did Gina pay for her wrist watch?
24. A square has area 121 square units and one of its corners is on the coordinate axes at  $(-3, -9)$ . Write two different sets of three points that could be the other three corners of the square.
25. Jeremy wishes to send a box of gifts to his family in the UK. He has two choices: *DHL* charges \$20 fees plus \$15 per pound in weight of the box. *ParcelForce* charges \$5 fees and \$17.50 per pound in weight.
- i. If Jeremy's box of gifts weighs 4 pounds, which company will be cheaper?
  - ii. What weight of box costs the same to send with both companies?