

Summer Math Review 2017
For Section 8 College Prep

- You should **not** use a calculator for this work.
- Work on a separate sheet of paper, except for questions 11, and 12a, which you should complete on this sheet.
- Rewrite the problem on your separate sheet of paper. Show all work.

1. Simplify each expression:

a. $a + a$

b. $b \cdot b$

c. $3m + m + m$

d. $5 + d \cdot d \cdot d$

e. $f \cdot f - g \cdot g \cdot g$

f. $8k \cdot k$

2. Evaluate the following expressions when $g = 4$, $h = 3$, and $j = -1$.

Where applicable, write your final answer as a fraction in simplest form

a. $2g^2 - 5$

b. $\frac{4h^2}{g}$

c. $\frac{(j+5)^2}{2g}$

d. $-\frac{2}{3}h + \frac{1}{2}g$

e. $2(j^2 + j)$

3. Use the distributive property to expand each expression.

a. $5(x + 3)$

b. $6(3 + 4m)$

c. $-3(x + 2)$

4. Simplify by combining like terms:

a. $2x - 5 - x + 7$

b. $2x + 3(x - 5) + 4$

c. $5x - (2x + 6)$

5. Restate each number as a product of prime numbers (prime factorization), then as a product of power expressions if possible.

Example: $100 = 2 \cdot 2 \cdot 5 \cdot 5 = 2^2 \cdot 5^2$

a. 8

b. 30

c. 54

6. Restate as a single power expression if possible, then evaluate if possible:

a. $t^3 \cdot t^6$

b. $(t^3)^6$

c. $3a^4 \cdot a^3$

d. $\frac{x^7}{x^4}$

e. $(x^7)^{\frac{1}{7}}$

7. Evaluate:

a. $3^2 + 3^3$

b. $2^2 \cdot 2^3$

c. $\frac{8^{14}}{8^{12}}$

d. $\left(\frac{1}{3}\right)^2$

e. $(2^3)^2$

8. Evaluate:

a. $3 + (-8)$

b. $-7 - 12$

c. $7 - (-13)$

d. $|3 - 6|$

e. $\sqrt{25} \cdot \sqrt{9}$

f. $4.5 + (-3.5)$

g. $2 + 3 \cdot 7$

h. $4 + 3^2$

i. $(3 + 2)^2$

j. $(-4)^2$

k. $\frac{1+2^3}{3^2}$

9. Rewrite as a single power expression without negative exponents, then evaluate.

a. $2^5 \cdot 2^{-4}$

b. $7^{11} \cdot 7^{-11}$

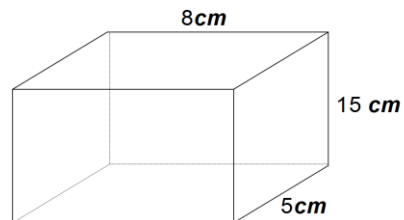
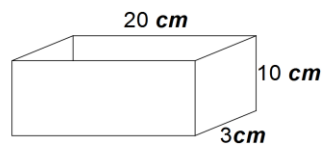
c. $\left(\frac{1}{5}\right)^{-2}$

d. $(3)^{-2}$

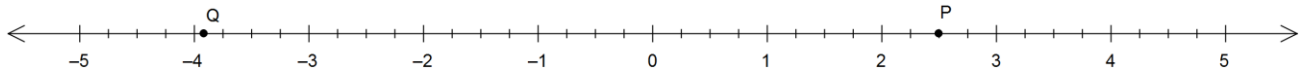
10. The prisms below are NOT drawn to scale.

a. The prisms pictured below have the same volume. What is it?

b. The prisms do not have the same surface area. Which has more surface area? By how much?



11. This question is about rational numbers.



- What is the coordinate of point P on the number line?
- What is the coordinate of point Q on the number line?
- Plot point V at -4.
- Plot point R at $-\frac{9}{4}$.
- Plot point S at $\frac{3}{2}$. Plot point T at the opposite of point S.
- Plot point U at the sum of points R and S. Is the coordinate for U positive or negative? Why?

12. Shilo has \$50 in the bank. He deposits \$5 per month.

- Complete the table below to show his bank balance.

m (months)	0	1	2	3	5	
b (money)	50					100

- Write an equation to show how much he will have, b , after m months.
- If Batya starts with only \$10, but saves \$10 per month, in how many months will she have the same amount as Shilo?

13. Solve for x :

- $2x + 4 = 22$
- $3(x + 2) = 21$
- $\frac{3x+1}{4} = 7$

14.

- a. If the cost of T-shirts is proportional to the number ordered, and we paid \$60 for 12 T-shirts, how much will 4 T-shirts cost?
- b. In the same situation, how much will 40 T-shirts cost?
- c. Still the same scenario, how much will 1 T-shirt cost?
- d. Write a rule using the letters x and y that describes the total cost for any number of shirts ordered.