

**Directions for completing the Accelerated Geometry**  
**Summer Algebra Skills Packet**  
**2018-19**

Please print out the entire packet and **do not** wait to start completing it! Go through each page and make sure you know how to do each problem. These are the basic Algebra 1 skills that you should have in order to enroll in Accelerated Geometry. You should be able to do these calculations without a calculator. Make sure your work is neat and organized for each problem you complete.

As you are working through each problem, make note of any problems you do not understand as well as any questions you may have. I will spend some time each day during the first couple weeks of school answering your questions and addressing your concerns. I will not be collecting your packet. However, your first test is over the contents of this packet.

If you get stuck, you can go to the following sources for help.

<https://www.khanacademy.org/math/algebra> (Sign-up for a free account.)

<http://www.coolmath.com/algebra/04-factoring>

<http://www.algebrahelp.com/>

If you have any questions, you can email me at [tbradfield@district70.org](mailto:tbradfield@district70.org). I will check my email periodically throughout the summer.

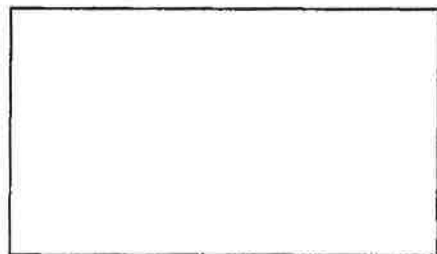
**Topics Included:**

1. Review of Fractions
2. Order of Operations
3. Simplifying Radicals
4. Solving Multi-Step Equations
5. Multiplying Binomials
6. Factoring Polynomials
7. Slope of a line
8. Graphing and Naming lines
9. Solving Systems of Equations

6) Evaluate the following (Simplifying where possible)

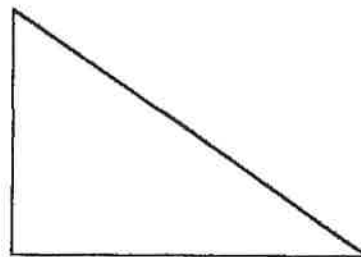
a	$\frac{1}{3} + \frac{1}{5}$	b	$\frac{5}{8} + \frac{2}{3}$	c	$7 + \frac{1}{2}$
d	$6 + \frac{1}{3}$	e	$1\frac{8}{9} + 5$	f	$4\frac{2}{7} + 3\frac{2}{3}$

7) Work out the areas and perimeters of the following shapes



$1\frac{3}{5} \text{ mm}$

$3\frac{2}{9} \text{ mm}$



$\frac{5}{11} \text{ m}$

$\frac{3}{4} \text{ m}$

8) Using the fact that  $\pi = \frac{22}{7}$ , find as a fraction the circumference and area of a circle with diameter  $\frac{4}{5} \text{ cm}$ .

9) Given that

$$a = \frac{3}{5} \quad b = \frac{4}{7} \quad c = 5\frac{2}{3} \quad d = \frac{23}{12}$$

a	$a + 2b$	b	$3c + 4d$	c	$c^2 - (a^2 + b^2)$
d	$a - b$	e	$b - a$	f	$4c - 3d$
g	$ac$	h	$2abd$	i	$2d^2 + 3c$
j	$\frac{a}{b}$	k	$\frac{b}{a}$	l	$\frac{c+d}{a}$

10) A train travels 150 miles in  $2\frac{1}{2}$  hours. Calculate the average speed of the train.

# SKILLS PRACTICE 6

For use with Section 1-4  
Order of Operations

NAME \_\_\_\_\_

DATE \_\_\_\_\_

1. List the order in which operations in an expression are to be performed.
- \_\_\_\_\_

For each of the following expressions, evaluate using the correct order of operations.

2.  $8 - 6 + 4 \times 2$  \_\_\_\_\_

3.  $8 \times 6 - 4 \times 2$  \_\_\_\_\_

4.  $8 \times (6 - 4) \times 2$  \_\_\_\_\_

5.  $8 \times 6 + 4 \times 2$  \_\_\_\_\_

6.  $8 \times 6 \div (4 \times 2)$  \_\_\_\_\_

7.  $2^3 - 5 + 4$  \_\_\_\_\_

8.  $12 + 6 - 4^2$  \_\_\_\_\_

9.  $2^4 \times 5 - 3$  \_\_\_\_\_

10.  $2^4 \times (5 - 3)$  \_\_\_\_\_

11.  $2 \div 4 \times 6 + 8$  \_\_\_\_\_

Evaluate each of the following expressions for the given value of the variable.

12.  $x^2$  if  $x$  is a. 6 \_\_\_\_\_

13.  $x^2 + 3$  if  $x$  is a. 6 \_\_\_\_\_

b. 0.2 \_\_\_\_\_

b. 0.2 \_\_\_\_\_

14.  $x^2 - 3x + 2$  if  $x$  is a. 4 \_\_\_\_\_

15.  $4x^2 + 3x + 2$  if  $x$  is a. 3 \_\_\_\_\_

b. 5 \_\_\_\_\_

b. 5 \_\_\_\_\_

c. 0.2 \_\_\_\_\_

Solve.

16. 75% of \_\_\_\_\_ is 24.

17.  $\frac{2}{3}$  of \_\_\_\_\_ is 81.

18.  $12\frac{2}{3} - 10\frac{3}{4} =$  \_\_\_\_\_

19.  $8.5 - 6 - 0.25 =$  \_\_\_\_\_

20. John mowed one third of a 1200 square foot lawn. Then he mowed four fifths of what remained. How many square feet of lawn remained unmowed after this?
- \_\_\_\_\_

## Solutions of Equations

Name \_\_\_\_\_

Date \_\_\_\_\_ Period \_\_\_\_\_

Solve.

1.  $\frac{x}{2} + 13 = 17$

8

2.  $\frac{x}{4} - 3 = 15$

3.  $\frac{x}{5} - 9 = 7$

4.  $\frac{x}{3} - 8 = 13$

5.  $\frac{x}{7} + 11 = 1$

6.  $\frac{x}{4} + 13 = 6$

7.  $\frac{x}{19} + 11 = 9$

8.  $\frac{x}{15} + 23 = 27$

9.  $\frac{x}{5} - 18 = -11$

10.  $\frac{x}{2} - 13 = -9$

11.  $\frac{1}{4}x + 9 = 13$

12.  $\frac{1}{6}x + 8 = 15$

13.  $8 - \frac{1}{3}x = 16$

14.  $5 - \frac{1}{4}x = 11$

15.  $\frac{1}{5}x + 27 = 22$

16.  $\frac{1}{7}x + 19 = 21$

17.  $\frac{1}{2}x - 29 = -22$

18.  $\frac{1}{3}x - 26 = -25$

19.  $\frac{3x}{5} + 22 = 28$

20.  $\frac{5x}{8} + 13 = 18$

21.  $14 - \frac{2x}{3} = 18$

22.  $19 - \frac{5x}{2} = 34$

23.  $\frac{3x}{5} + 22 = 16$

24.  $\frac{4x}{3} + 25 = 33$

25.  $\frac{2}{3}x - 3 = 11$

26.  $\frac{5}{7}x - 4 = 21$

27.  $\frac{4}{9}x + 7 = 31$

28.  $\frac{3}{8}x - 14 = 1$

29.  $17 - \frac{5}{9}x = 27$

30.  $53 - \frac{2}{3}x = 59$

31.  $41 - \frac{3}{8}x = -22$

32.  $28 - \frac{2}{5}x = 34$

## Equations Having More Than One Variable

Name \_\_\_\_\_

Date \_\_\_\_\_ Period \_\_\_\_\_

Solve for  $y$ .

1.  $2x + y = 7$

$y = 7 - 2x$

2.  $4x + y = 9$  \_\_\_\_\_

3.  $-x + 4y = 9$  \_\_\_\_\_

4.  $7x + 2y = 5$  \_\_\_\_\_

5.  $3x - y = 12$  \_\_\_\_\_

6.  $6x + 5y = 12$  \_\_\_\_\_

7.  $-2x - 3y = 10$  \_\_\_\_\_

8.  $-x + 6y = 3$  \_\_\_\_\_

9.  $x + \frac{1}{2}y = 6$  \_\_\_\_\_

10.  $x + \frac{1}{4}y = 10$  \_\_\_\_\_

11.  $3x + \frac{2}{3}y = 15$  \_\_\_\_\_

12.  $7x - y = 13$  \_\_\_\_\_

13.  $x + \frac{y}{5} = 10$  \_\_\_\_\_

14.  $7x + \frac{5y}{6} = 6$  \_\_\_\_\_

15.  $2x + \frac{3y}{7} = 9$  \_\_\_\_\_

16.  $4x + \frac{3}{4}y = 11$  \_\_\_\_\_

Solve for the variable specified. Assume domains include only values that give nonzero denominators.

17.  $d = rt$  for  $t$

$t = \frac{d}{r}$

18.  $d = rt$  for  $r$  \_\_\_\_\_

19.  $A = bh$  for  $h$  \_\_\_\_\_

20.  $A = bh$  for  $b$  \_\_\_\_\_

21.  $p = 2(L + W)$  for  $L$  \_\_\_\_\_

22.  $A = \frac{1}{2}bh$  for  $h$  \_\_\_\_\_

23.  $C = 2\pi r$  for  $r$  \_\_\_\_\_

24.  $V = \pi r^2 h$  for  $h$  \_\_\_\_\_

25.  $A = \frac{h}{2}(a + b)$  for  $a$  \_\_\_\_\_

26.  $A = \frac{h}{2}(a + b)$  for  $b$  \_\_\_\_\_

27.  $I = prt$  for  $r$  \_\_\_\_\_

28.  $E = IR$  for  $R$  \_\_\_\_\_

29.  $S = \frac{n}{2}(a + 1)$  for  $n$  \_\_\_\_\_

30.  $L = a + d(n - 1)$  for  $a$  \_\_\_\_\_

## Powers of Binomials

Name \_\_\_\_\_

Date \_\_\_\_\_ Period \_\_\_\_\_

Multiply.

1.  $(5 + x)^2$   $25 + 10x + x^2$

2.  $(2y + 1)^2$

3.  $(3ab - 4)^2$

4.  $(7x - 2)^2$

5.  $(c + 1)^2$

6.  $(8a - b)^2$

7.  $(4x - 3y)^2$

8.  $(x + 9y)^2$

9.  $(3 + 2d)^2$

10.  $(9x + 2y)^2$

11.  $(5r - 8)^2$

12.  $(p - 2)^2$

13.  $(4a + 5b)^2$

14.  $(5ab - 2)^2$

15.  $(7x - 3y)^2$

16.  $(6 - 5xy)^2$

17.  $(q - 3)^2$

18.  $(9s + 1)^2$

19.  $(8 - 5t)^2$

20.  $(ab + 8)^2$

21.  $(9a + 4b)^2$

22.  $(3 - 5m)^2$

23.  $(5v + 3)^2$

24.  $(5z + 9)^2$

25.  $(7c - 4d)^2$

26.  $(6x + y)^2$

27.  $(x + 1)^3$

28.  $(2c - 1)^3$

29.  $(2a - 3b)^3$

30.  $(r + 4)^3$

31.  $(1 - c)^4$

32.  $(2d + 1)^4$

33.  $(3x + 2y)^4$

34.  $(1 - 4r)^4$

## Factoring

Name \_\_\_\_\_

Date \_\_\_\_\_ Period \_\_\_\_\_

Factor.

1.  $x^2 + 5x + 6$   $(x + 2)(x + 3)$

2.  $x^2 + 9x + 20$

3.  $x^2 + 7x + 6$

4.  $x^2 + 10x + 21$

5.  $x^2 + 15x + 56$

6.  $x^2 + 3x + 2$

7.  $x^2 + 8x + 16$

8.  $x^2 + 2x + 1$

9.  $x^2 + 7x + 12$

10.  $x^2 + 13x + 42$

11.  $x^2 + 5x + 4$

12.  $x^2 + 14x + 45$

13.  $x^2 + 6x + 9$

14.  $x^2 + 6x + 5$

15.  $x^2 + 10x + 24$

16.  $x^2 + 4x + 4$

17.  $x^2 + 8x + 7$

18.  $x^2 + 12x + 36$

19.  $x^2 + 9x + 18$

20.  $x^2 + 16x + 63$

21.  $x^2 + 10x + 16$

22.  $x^2 + 12x + 27$

23.  $x^2 - 6x + 8$

24.  $x^2 - 11x + 30$

25.  $x^2 - 3x + 2$

26.  $x^2 - 9x + 8$

27.  $x^2 - 13x + 36$

28.  $x^2 - 15x + 56$

29.  $x^2 - 8x + 16$

30.  $x^2 - 8x + 12$

31.  $x^2 - 12x + 27$

32.  $x^2 - 17x + 72$

33.  $x^2 - 11x + 28$

34.  $x^2 - 6x + 9$

State the slope of the line containing the given points.

1. (3, 4) and (-2, 3) *The slope is  $\frac{1}{5}$ .*
2. (-2, 5) and (-3, 6)
3. (1, 6) and (2, 3)
4. (4, -1) and (5, 3)
5. (-1, 4) and (3, 5)
6. (3, -3) and (3, -2)
7. (7, -2) and (8, -1)
8. (-6, 2) and (-4, -3)
9. (-4, -8) and (-4, 2)
10. (2, -5) and (7, 2)
11. (3, 5) and (-2, 5)
12. (-4, 3) and (-5, 8)
13. (-7, 6) and (3, 9)
14. (-1, 5) and (-3, 7)
15. (12, -15) and (10, -6)
16. (9, 2) and (-5, 2)

Graph the line with the given slope  $m$  containing the given point  $P$ .

17.  $P = (0, 2); m = 1$
18.  $P = (-2, 3); m = 2$
19.  $P = (-3, -4); m = \frac{1}{2}$
20.  $P = (0, -2); m = \frac{2}{3}$
21.  $P = (2, -1); m = 0$
22.  $P = (-4, 3); m = -3$
23.  $P = (3, 2); m = 3$
24.  $P = (-2, -2);$  no slope
25.  $P = (4, -1); m = -\frac{3}{4}$
26.  $P = (0, -3); m = -\frac{1}{2}$
27.  $P = (3, 4);$  no slope
28.  $P = (3, 4); m = 0$
29.  $P = (0, 0); m = -2$
30.  $P = (4, -1); m = \frac{1}{3}$
31.  $P = (-3, 2); m = 4$
32.  $P = (3, 3); m = -1$



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Solve each pair of equations by substitution.

1.  $x - y = 7$   
 $x + y = 9$  (8, 1)

2.  $3x - y = 5$   
 $x + 3y = 5$

3.  $x - y = -2$   
 $4x - 3y = 4$

4.  $2x - 3y = 3$   
 $x + 4y = 7$

5.  $x - y = 6$   
 $2x - 3y = 20$

6.  $2x - y = 8$   
 $3x - y = 6$

7.  $x + 3y = 7$   
 $4x - 5y = -6$

8.  $4x - 3y = 5$   
 $3x + 6y = 12$

9.  $4x + y = -19$   
 $7x - y = 8$

10.  $5x + 6y = 10$   
 $2x - y = 4$

11.  $3x - y = 5$   
 $4x - y = 3$

12.  $3x + 4y = -20$   
 $x - 5y = 6$

13.  $6x - 5y = 4$   
 $y - 4x = 2$

14.  $7x + 3y = 20$   
 $x + y = 4$

15.  $5x + 2y = -30$   
 $3x - y = 4$

16.  $3x + 6y = 16$   
 $x + 3y = 5$

17.  $3x - 7y = 22$   
 $5x - y = 2$

18.  $2x + 3y = 73$   
 $x - 5y = 4$

19.  $2x - y = 5$   
 $3x + 7y = -1$

20.  $3x - 4y = 7$   
 $x - 3y = 2$

21.  $4x - 12y = 1$   
 $4x - 7y = 6$

22.  $5x + 3y = 15$   
 $2x - 3y = -1$

23.  $2x - 5y = 2$   
 $6x + 5y = 2$

24.  $3x - 2y = 0$   
 $5x + 4y = 11$

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