Name _____

Pre-Algebra Honors Summer Review Packet

Simplify. Use order of operations.

1. $-5(-1 + 6)$

2. $\dfrac{8(-3)}{-6}$

3. $\dfrac{-380}{38} + \dfrac{380}{-38}$

4. $(2)(-2) + (5)(6)$

5. $\dfrac{-15}{15} + \dfrac{150}{15}$

6. $(-1)(-7)^2$

7. $(-3)(7)(-2)(5)$

8. $(-2)^4$

9. $(-3)(-12)(-1)$

10. $\dfrac{-60}{-3} + \dfrac{-48}{4}$

11. $-1(-6) + 8(-2)$

12. $(-9)^2(-1)^5$

13. $(-8)(-1)(4)(-3)$

14. $\dfrac{9(-4)}{-2}$

15. $\dfrac{-32}{2} + \dfrac{-75}{-15}$

16. $-7 + 8 + (-9) + 10$

17. $(-3)^2(-2)^3$

18. $\dfrac{-6 + (-3) + (-7)}{4}$

19. $-5 \cdot 2 \cdot 53$

20. $-8 + 17 + (-3)$

21. $\dfrac{-72}{8} + \dfrac{-56}{7}$

22. $(-3 \cdot 7) + (-2 \cdot 4)$

23. $\dfrac{170}{-10} + \dfrac{96}{12}$

24. $(-30)^2$

25. $(-7)(5)(-4)$

26. $\dfrac{-9 \cdot 5}{3}$

27. $(-2)(-3) + (-1)(7)$

28. $(-4)^3$

29. $\dfrac{(-4)(-25)}{5}$

30. $\dfrac{-19 + (-11)}{6}$

31. $80 + (-50) + (-70)$

32. $-2(-5)(-6)$

Algebraic Expressions

Use the distributive property to write an equivalent expression.

25. $5(5 + c)$ _____   26. $-8(y + 2)$ _____   27. $(m + 1)9$ _____

28. $-3(2a + 5)$ _____   29. $4(y + 3z)$ _____   30. $(2a + 3b)4$ _____

Factor and check by multiplying.

31. $9y + 21$ _____   32. $14a + 35b$ _____   33. $3x + 21y + 12z$ _____

34. $7m + 42n$ _____   35. $10c + c$ _____   36. $9 + 21z$ _____

37. $8a + 6b + 10c$ _____   38. $10x + 25y + 30$ _____   39. $36 + 72s + 4t$ _____

Collect like terms.

40. $17c + 6c$ _____   41. $3y + 7x + 5y$ _____

42. $3a^2 + 16 + 9a + 2a^2$ _____   43. $5m + 11n + 11m + 5n$ _____

44. $\frac{3}{5}z + \frac{2}{5}z + 4z + 9$ _____   45. $\frac{3}{10}y + 2y + 7y + \frac{7}{10}y$ _____

Write as an algebraic expression.

1. 7 less than 4 times a number

   _ _ _ _ _ _ _ _ _ _ _ _ _

2. 11 more than half a number

   _ _ _ _ _ _ _ _ _ _ _ _ _

3. 6 less than twice w

   _ _ _ _ _ _ _ _ _ _ _ _ _

4. the sum of triple z and half of x

   _ _ _ _ _ _ _ _ _ _ _ _ _

5. 5 more than the product of 14 and y

   _ _ _ _ _ _ _ _ _ _ _ _ _

6. 1/2 the difference of a number and 15

   _ _ _ _ _ _ _ _ _ _ _ _ _

7. double the sum of x and 5

   _ _ _ _ _ _ _ _ _ _ _ _ _

8. 4 less than the quotient of x and -5

   _ _ _ _ _ _ _ _ _ _ _ _ _

Translate to an equation and solve.

9. A number increased by 36 is 15. Find the number. _____

10. A number decreased by 83 is 46. Find the number. _____

11. Rico delivered 292 newspapers this week. This was 17 more than last week. How many newspapers did he deliver last week? _____

12. Nancy bought a box of 12 brackets for $11.52. What was the cost of a single bracket?

    _ _ _ _ _ _ _ _ _ _ _ _ _

13. Shauna bought a skirt on sale for $28. That is 80% of the regular price. What is the regular price?

    _ _ _ _ _ _ _ _ _ _ _ _ _

Percent

Write as a decimal.

1. 19% _____
2. 130% _____
3. 0.05% _____
4. 1.65% _____
5. 24% _____

Express as a percent.

6. $\frac{3}{5}$ _____
7. $\frac{7}{10}$ _____
8. $\frac{10}{8}$ _____
9. $\frac{1}{20}$ _____
10. $\frac{3}{2}$ _____

Solve.

11. What percent of 65 is 40? _____
12. What number is 8% of 250? _____

13. What is 120% of 50? _____
14. What percent of 50 is 112? _____

Find the absolute value.

15. $|4|$ _____
16. $|-1.7|$ _____
17. $|0|$ _____
18. $|-8|$ _____

19. $|-5.2|$ _____
20. $|0.3|$ _____
21. $|-9.1|$ _____
22. $|-37|$ _____

Extra Practice

Use a proportion or an equation to solve.
1. 60% of 185
2. 5% of 80
3. 4% of 55

Use a proportion or an equation to solve.
4. What percent of 90 is 27?
5. 63 is what percent of 105?
6. What percent of 160 is 120?
7. 9 out of 36 is what percent?

Use a proportion or an equation to solve. Round to the nearest tenth.
8. 14 is 7% of what number?
9. 40% of what number is 35?
10. 15% of what number is 45?
11. 22 is 25% of what number?

Solve by writing an equation.

12. A pair of jeans costs 75% as much as a pair of corduroy pants. What is the cost of each if the total cost for the jeans and cords is $42?

13. When Juanita was on vacation it rained 35% of the days. She was on vacation for 20 days. How many days did it rain?

Find the discount and sale price for each.

14. Regular price = $45
Discount = 40%

15. Regular price = $2,450
Discount = 6%

Simplifying and Evaluating

Simplify.

1.) $6x + 2(3x - 1) =$ _____

2.) $18 - (4x - 12) =$ _____

3.) $5y + 3x - 13y + 5x =$ _____

4.) $5(2x - 8) - 14 =$ _____

5.) $6(4x - 9) + 5(3x + 11) =$ _____

6.) $18a - (a - 12) + 7(2a - 1) =$ _____

7.) $24 + 12(5x - 2) - 3(8x + 10) =$ _____

8.) $2(6y - 4) - (4y + 8) + y =$ _____

9.) $5a + 6(a + 3b - 4) - 10(4a - 2b) + 21 =$ _____

10.) $9x + 3y - 4(x - 7) + 2(5y - 8) - (6x + 11y) =$ _____

Evaluate for the given values.

① $\dfrac{xa}{c} =$

② $\dfrac{2a^2}{x} =$

③ $\dfrac{(2a)^2}{x} =$

④ $\dfrac{(2a)^2}{2a^2} =$

⑤ $\dfrac{c^2y^2}{z} =$

⑥ $\dfrac{^-8y^2}{b+z} =$

⑦ $\dfrac{x^2+c^2}{b} =$

⑧ $\dfrac{y^2-a^2}{y+a} =$

⑨ $\dfrac{^-x^2}{z} =$

⑩ $\dfrac{^-4a^2}{c+b} =$

⑪ $\dfrac{(z+b)^2}{2b} =$

⑫ $\dfrac{3a^2+7a}{x} =$

VALUES OF THE VARIABLES

$x = 2$ $a = {}^-3$
$y = {}^-1$ $b = {}^-8$
$z = 4$ $c = 6$

Solving Equations

Distribute.

1. $-2(a + 12)$ _____
2. $-(8 - 9y)$ _____
3. $17 - (4t + 9)$ _____

4. $-(-a - 5b)$ _____
5. $7x - (3 + 2x) + 11$ _____

Solve each equation. Show all steps.

1. $3x - 7 = x - 9$
2. $10 - 8z = -z - 4$
3. $2y + 7 = 5y - 8$

4. $2(3x + 1) = 9x - 1$
5. $2a + (5a - 13) = 47$
6. $3(y + 7) = 2(y + 9)$

7. $3(m - 5) + 1 = 2(m +1) - 9$
8. $\dfrac{2y - 12}{4} = -25$

9. $19 - (2x + 3) = 2(x + 3) + x$
10. $62 = \dfrac{a}{3} + 51$

11. $5x - 2(x - 1) = 2(2x - 1)$
12. $4r - 4(r - 4) + r = 37$

13. $-3(4w + 5) = 3w + 15$
14. $4(y + 2) - 21 = -3(6 - y) + 2$

(Clear Fractions)

15. $\dfrac{2}{3} + x = -\dfrac{5}{2} - \dfrac{5}{6}$
16. $5 - \dfrac{3}{4}y = \dfrac{5}{3}y + \dfrac{1}{6}$

17. $4\left(\dfrac{1}{5}a - \dfrac{1}{2}\right) + \dfrac{1}{2}a = 11$
18. $3x + 2\left(\dfrac{1}{2}x - x\right) = 4$

More Equations

Solve by clearing fractions.

1.) $\dfrac{2}{7}x + \dfrac{1}{2}x = \dfrac{3}{4}x + 1$

2.) $\dfrac{8}{5}y - \dfrac{2}{3}y = 23 - \dfrac{1}{15}y$

3.) $9 - \dfrac{4}{5}[u - 3] = 1$

4.) $\dfrac{4}{9}y - \dfrac{4}{3} = \dfrac{1}{6}y + \dfrac{11}{18}$

5.) $1 - \dfrac{2}{3}y = \dfrac{9}{5} - \dfrac{y}{5} + \dfrac{3}{5}$

6.) $\dfrac{2}{3} + 3y = 5y - \dfrac{2}{15}$

Solve by clearing decimals.

7.) $0.13y - 4.1 = 0.3y - 1.7 - 0.41y$

8.) $0.7n - 15 + n = 1.2 + 1.5n - 9.2$

9.) $0.07x + 9.95 = 9.1x - 4.5x + 12.47 - 4.6x$

Rewriting Formulas

Write an expression for each of the following.

1. An adult's ticket costs $1.75 more than a child's ticket. Write an expression for the total cost of three adults' tickets and five children's tickets.

_____

2. There are 114 more boys than girls in the sophomore class. Write an expression for the total number of sophomore students.

_____

3. The sum of three consecutive integers

_____

4. The sum of an integer and half of the nest integer.

_____

Solve.

5. The sum of three consecutive integers is 84. What are the integers?

_____

6. The sum of three consecutive odd integers is 159. Find the integers.

_____

7. A 35-ft board is cut into three pieces. The second piece is twice as long as the first. The third is twice as long as the second. How long is each piece?

_____

Solve for the given variable.

8. $A = 2bc$, for b _____

9. $A = 2bc$, for c _____

10. $R = \frac{s}{t}$, for s _____

11. $R = \frac{s}{t}$, for t _____

12. $W = 3y + 3z$, for y _____

13. $W = 3y + 3z$, for z _____

14.) $A = \pi r^2$, for r^2

15.) $A = \pi r^2$, for π

16.) $A = \frac{1}{2}bh$, for b

17.) $A = \frac{1}{2}bh$, for h

18.) $E = mc^2$, for m

19.) $E = mc^2$, for c^2

20.) $A = \frac{a + b + c}{3}$, for b

21.) $A = \frac{a + b + c}{3}$, for c

22.) $v = \frac{3k}{t}$, for t

23.) $P = \frac{ab}{c}$, for c

Proportions and Fractions

SP8

Solve.

① $\frac{10}{6} = \frac{15}{F}$ F =

③ $\frac{4}{A} = \frac{9}{18}$ A =

⑤ $\frac{24}{D} = \frac{16}{22}$ D =

② $\frac{6}{4} = \frac{H}{10}$ H =

④ $\frac{C}{15} = \frac{21}{9}$ C =

⑥ $\frac{15}{20} = \frac{18}{K}$ K =

7. $\frac{52}{4} = \frac{m}{5}$ _____

8. $\frac{2}{7} = \frac{6}{c}$ _____

9. $\frac{105}{168} = \frac{r}{8}$ _____

10. $\frac{8}{a} = \frac{21}{42}$ _____

11. $\frac{t}{9} = \frac{10}{15}$ _____

12. $\frac{3}{5} = \frac{21}{y}$ _____

13. The ratio of boys to girls on the swim team is 5 to 4. How many girls are on the team if there are 65 boys?
_____

14. Mitch can type 4 pages in 15 minutes. At this rate, how many pages can he type in 2 hours?
_____

Compute.

① $^-1\frac{1}{4} + {}^-2\frac{1}{2} =$

② $^-3\frac{2}{3} + {}^-1\frac{2}{5} =$

③ $4\frac{1}{2} + {}^-2\frac{1}{3} =$

④ $3\frac{1}{6} + {}^-5\frac{3}{5} =$

⑤ $^-8\frac{3}{4} + 1\frac{3}{10} =$

⑥ $^-7\frac{1}{3} + 7\frac{3}{4} =$

⑦ $^-2\frac{1}{16} + {}^-2\frac{1}{3} =$

⑧ $4\frac{2}{9} + {}^-9\frac{1}{2} =$

⑨ $^-8\frac{3}{4} + 1\frac{2}{5} =$

⑩ $^-3\frac{1}{4} + {}^-5\frac{7}{9} =$

⑪ $6\frac{8}{11} + 2\frac{2}{3} =$

⑫ $5\frac{5}{6} + {}^-5\frac{8}{9} =$

⑬ $^-3\frac{4}{5} + 2\frac{3}{10} =$

⑭ $8\frac{3}{8} + {}^-9\frac{2}{3} =$

Inequalities

Solve.

1.) $-3x < 18$

2.) $5x \leq 7x + 6$

3.) $5 - 2x \geq -16$

4.) $24 > 7y - 11$

5.) $2(3a - 5) > 2a + 6$

6.) $-3(4y - 6) \leq 7 - y$

7.) $10(x + 2) > -2(6 - 9x)$

8.) $9x - 2x \geq 14 - 9(-x - 4)$

9.) $2(8x - 6) - 7x < 12 + 5x$

Scientific Notation.

Write using standard notation.

40. 6.781×10^5 _____

41. 2.001×10^{-2} _____

42. 7.61×10^{-5} _____

43. 3.114×10^3 _____

Write using scientific notation.

44. $6,821,000$ _____

45. 0.810001 _____

46. 0.00000671 _____

47. 2631 _____

Exponents

Simplify. Express using positive exponents.

1. $5^{10} \cdot 5^2$ _____

2. $t^0 \cdot t^5$ _____

3. $4^2 \cdot 4^5 \cdot 4^7$ _____

4. $n^7 \cdot n^3$ _____

5. $a^3 \cdot a^3 \cdot a$ _____

6. $(7x^2y^3)(xy)$ _____

7. $\dfrac{x^{16}y^2}{x^3y}$ _____

8. $\dfrac{(2x)^5}{(2x)^{12}}$ _____

9. $\dfrac{(8x)^5}{(8x)^5}$ _____

Express using positive exponents.

10. 6^{-3} _____

11. x^{-1} _____

12. $3y^{-2}$ _____

13. m^{-4} _____

14. $7y^{-1}$ _____

15. $(5a)^{-1}$ _____

16. 1^{-5} _____

17. x^0 _____

18. $6y^{-3}$ _____

Simplify.

19. $(2t^4)^3$ _____

20. $(-3x^2)^3$ _____

21. $(a^5b^7c)^6$ _____

22. $(3ab^2)^4$ _____

23. $(-4a^3)^2$ _____

24. $(7x^2y^3z)^2$ _____

25. $\left(\dfrac{x^3}{y^2}\right)^2$ _____

26. $\left(\dfrac{a^2}{2}\right)^4$ _____

27. $\left(\dfrac{3}{5y^2}\right)^2$ _____

Multiply.

28. $(3m^2)5$ _____

29. $(16y^3)(-7)$ _____

30. $(-3x^5)(x^2)$ _____

31. $(-2a^2)(3a^9)$ _____

32. $(x^2y^5)(xy^2)$ _____

33. $(2a^2b)(5ab)$ _____

Divide.

34. $\dfrac{x^{16}}{x^4}$ _____

35. $\dfrac{t^2}{t^2}$ _____

36. $\dfrac{5m^7}{m^4}$ _____

37. $\dfrac{12x^5}{3x^3}$ _____

38. $\dfrac{4a^3}{4}$ _____

39. $\dfrac{25a^2b^3}{5a}$ _____

Simplify.

40.) $\dfrac{45x^3}{15x^2}$

41.) $\dfrac{24a^6b^9}{-6a^6b^3}$

42.) $\dfrac{5a^{11}b^7}{-7a^5b^9}$

43.) $\dfrac{(-5m)^4}{(-25m^2)^2}$

44.) $\dfrac{-4ab^3}{-8a^2b^4}$

45.) $\dfrac{a^4b^5}{3a^2b^6}$

46.) $\dfrac{10x^5y^4}{2x^3y}$

47.) $\dfrac{-12p^8r^3}{4p^6r^4}$

48.) $\dfrac{(3a^3)^2}{18a^2}$

49.) $\dfrac{(4y^3)^2}{(4y^2)^2}$

50.) $\dfrac{-2m^3}{-4m^4n^6}$

Simplifying Expressions

I. Combine like terms.

1. $(4x^2 + 3x - 9) + (-9x + 10)$ _____

2. $(9x^4 + 5x^2 - 2) + (3x^3 + 3)$ _____

3. $(2x^4 + 5x^2 - 7x - 4) + (-7x^4 - 3x^2 + 7x + 5)$ _____

4. $(14x^3 - 4x^2 - 3) + (9x^2 + 6x - 2)$ _____

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

6. $(5a^2 - 7a + 1) - (2a^2 + 3a - 6)$ _____

7. $(3m^2n + mn - 5) - (2m^2n - m + 9)$ _____

8. $(11x^2y + 6xy - y^2 + 6) - (4x^2 + 3y^2 - 9)$ _____

9. $(4t^3 + 8t^2 - t + 21) - (3t^2 - 10t)$ _____

II. Simplify. Write using positive exponents.

1.) y^{-4} _____

2.) $5x^2y^{-2}$ _____

3.) $(4a)^{-1}$ _____

4.) $\dfrac{x^3 \cdot x^5}{x^7}$ _____

5.) $c^2 \cdot c^{10} \cdot c^{-8}$ _____

6.) $16a^{-3}b$ _____

III. Evaluate.

1.) $-\sqrt{25}$ _____

2.) $\sqrt{39 + 10}$ _____

3.) $\sqrt{72 - 8}$ _____

4.) $\sqrt{4} + \sqrt{400}$ _____

5.) $5\sqrt{100} + 2\sqrt{900}$ _____

6.) $4\sqrt{81} - \sqrt{16 + 9}$ _____

7.) $\left(\sqrt{9}\right)^2$ _____

8.) $\left(\sqrt{19}\right)^2$ _____

9.) $\sqrt{\dfrac{1}{9}}$ _____

10.) $\sqrt{\dfrac{100}{121}}$ _____

Summer Vacation

Graphing on the Coordinate Plane

*For the following points, tell the location on the coordinate plane.

QI = Quadrant 1; QII = Quadrant 2; QIII = Quadrant 3; QIV = Quadrant 4

Other choices: Origin; X axis; Y axis

1) (2, -4) _____   2) (0, 8) _____   3) (6, 7) _____

4) (-12, -3) _____   5) (0, 0) _____   6) (-5, 0) _____

*Make a table of solutions for the following linear equations. Use −2, −1, 0, 1, 2 for x values. Then graph the solutions on the coordinate plane and create a line.

7) $y = 3x$

8) $y = 2x + 5$
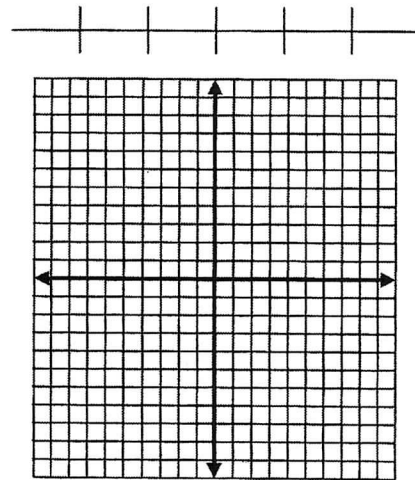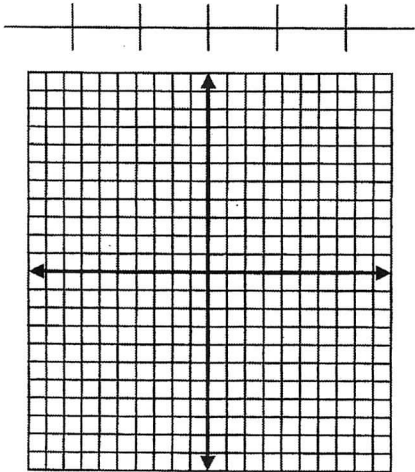
9) $y = 5x - 1$

10) $6x + 2y = -8$
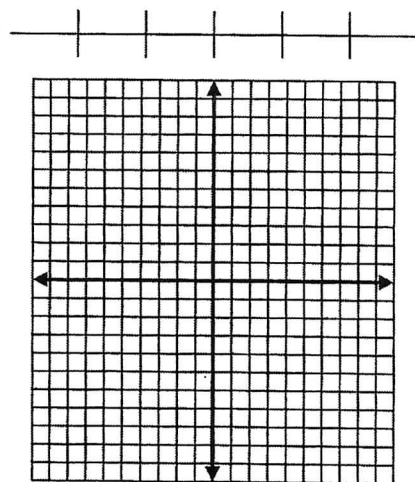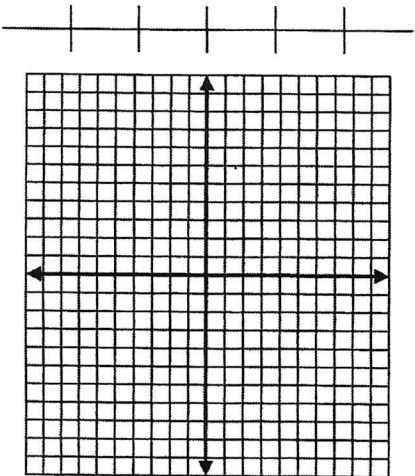
Find the area of each figure.

1.

8 cm

4.5 cm

_____

2.

35 mm

35 mm

_____

3.

9 cm   15 cm

12 cm

_____

4.

6 cm

15 cm

_____

5.

1.4 cm   3.5 cm

2.5 cm

_____

6.

0.6 cm

2.5 cm

_____
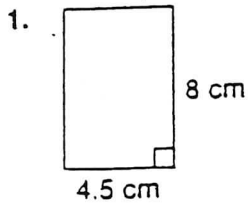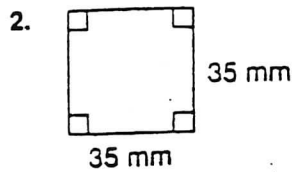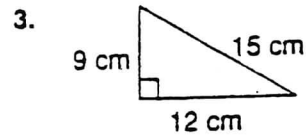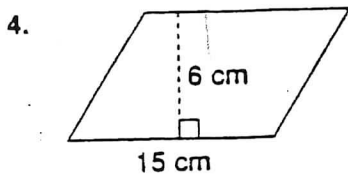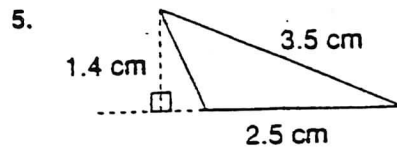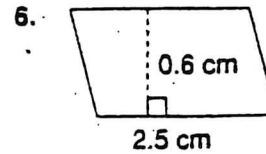
Find the circumference and the area of each circle.
Choose mental math, paper and pencil, or a
calculator. Use 3.14 for π.   Round to the nearest hundredth.
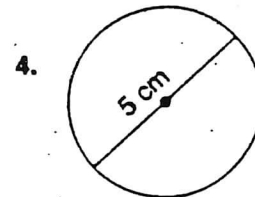
1.

6 cm

$C =$ _____

$A =$ _____

2.

10 cm

$C =$ _____

$A =$ _____

3.

2 cm

$C =$ _____

$A =$ _____

4.

5 cm
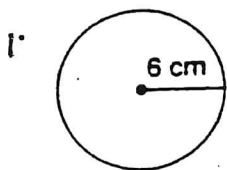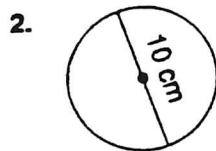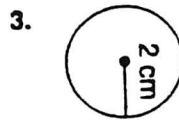
$C =$ _____

$A =$ _____

Find the area of each trapezoid.

5.

12 m

6 m   7 m

8 m

6.

10 in.

12 in.

6 in.

8 in.

7.

6 ft

6.5 ft   6 ft   10 ft

16.5 ft
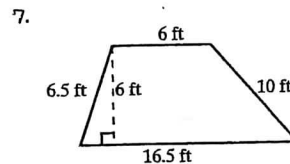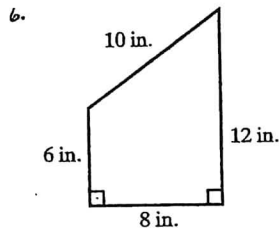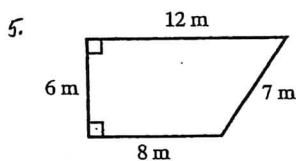
Find the area of each shaded region.   Round to the nearest hundredth.

8.

20 cm

6 cm
14 cm   10 cm

9.

4 cm

4 cm
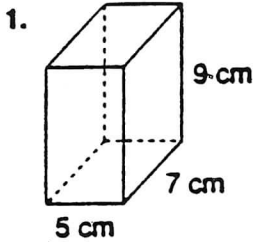
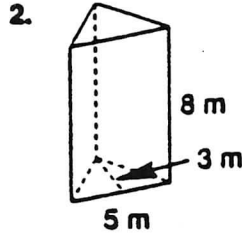_____
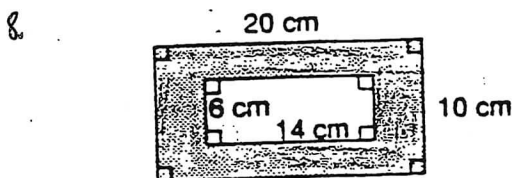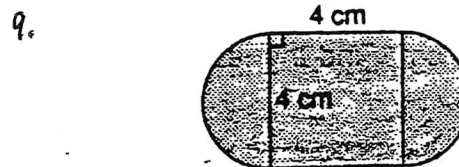
Volume and Surface Area
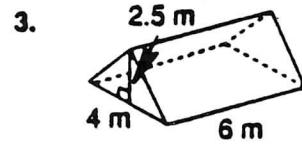
Compute the volume of each 3-D solid. Use 3.14 for π. Use the formula list below.
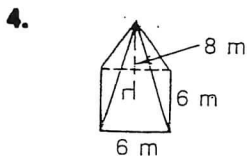Round to the nearest hundredth if necessary.

1.
9 cm
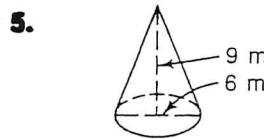7 cm
5 cm
_____

2.
8 m
3 m
5 m
_____

3.
2.5 m
4 m   6 m
_____

4.
8 m
6 m
6 m
_____

5.
9 m
6 m
_____

Find the volume and surface area of each prism and cylinder below.

1.
4 m
_____
Surface = _____

2. 5 ft
12 ft
4 ft
_____
Surface = _____

3.
1.4 m
2 m
3.2 m
_____
Surface = _____

4.
14 cm
40 cm
_____
_____

5.
6 mm   32 mm
_____
_____

Formulas
$V = \ell w h$
$V = \pi r^2 h$
$V = (\frac{1}{2} b_\Delta h_\Delta) h_p$
$V = \frac{1}{3} \ell w h$
$V = \frac{1}{3} \pi r^2 h$
$SA = 2\ell w + 2\ell h + 2wh$
$SA = 2\pi r^2 + 2\pi r h$

Have an Ice Day!

1 What do you call identical twin sisters when both are ice skating champions?

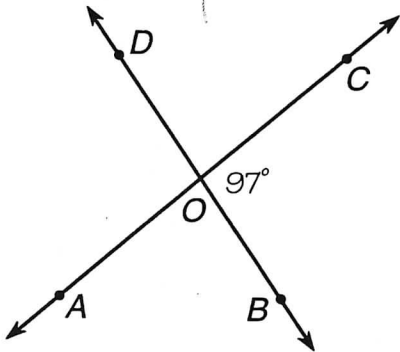$\overline{141°}$ $\overline{48°}$ $\overline{42°}$ $\overline{44°}$ $\overline{33°}$ $\overline{129°}$ $\overline{42°}$ $\overline{42°}$ $\overline{26°}$ $\overline{69°}$ $\overline{48°}$ $\overline{72°}$ $\overline{83°}$ $\overline{26°}$ $\overline{42°}$ $\overline{70°}$

2 What unfortunate mistake did the champion ice skater make with his gold medal?

$\overline{57°}$ $\overline{42°}$ $\overline{136°}$ $\overline{57°}$ $\overline{135°}$ $\overline{46°}$ $\overline{122°}$ $\overline{141°}$ $\overline{97°}$ $\overline{28°}$ $\overline{62°}$ $\overline{147°}$ $\overline{83°}$ $\overline{26°}$ $\overline{39°}$ $\overline{42°}$ $\overline{46°}$

> Use the given angle measures to find the angle measures indicated for each figure.
> Each time your answer appears in the code, write the letter of the exercise above it.

T m∠AOD =

O m∠AOB =

A m∠SQR =

S m∠P =
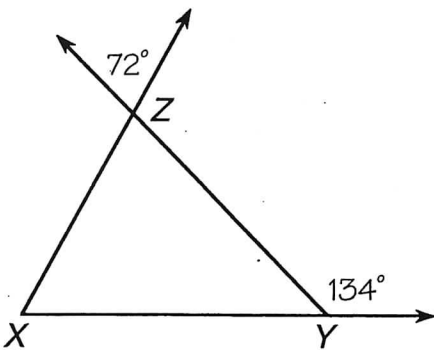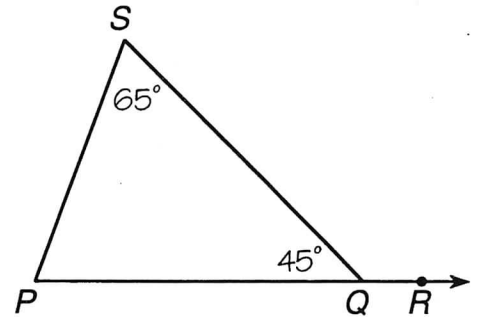
L m∠XZY =

D m∠ZYX =

B m∠X =

U m∠JNM =

Z m∠NLM =

I m∠NLK =
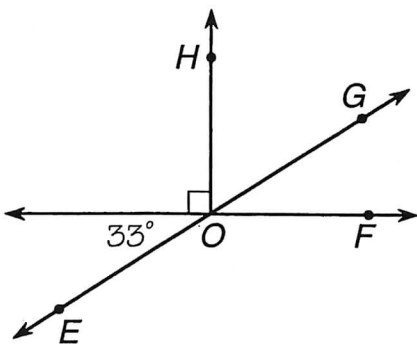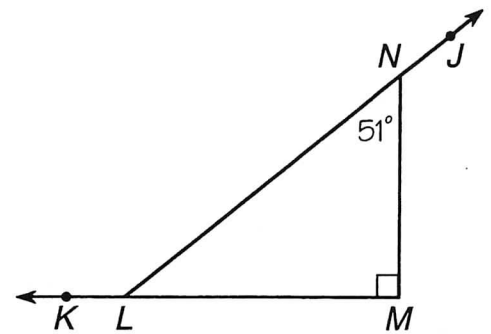
G m∠FOG =

H m∠GOH =

R m∠EOF =

C m∠UVW =

E m∠VWU =

N m∠UWT =

Geometry Concepts:
Related Angles

Distributing and Factoring

Distribute to simplify each product.

1. $4x(3x - 5)$ _____

2. $-8x(x - 7)$ _____

3. $7xy^2(y - 2x + x^2)$ _____

4. $3xy(2xy + 5)$ _____

5. $-9xyz(-2xy + 3yz - 4xz)$ _____

6. $12ab\left(-\frac{1}{2}b + \frac{1}{4}a^3\right)$ _____
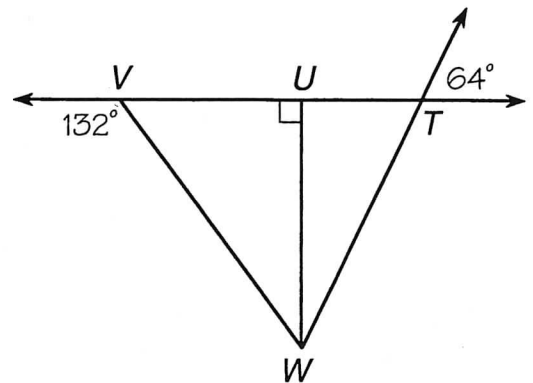
7. $-15a^2(a - b + 3c)$ _____

8. $-3x^2a^2(2a^3 + ab - x)$ _____

Example   Factor $4a^3b^2c - 12b^2c^3$.

Solution   1. The greatest monomial factor of $4a^3b^2c - 12b^2c^3$ is $4b^2c$.

2. Divide: $\dfrac{4a^3b^2c - 12b^2c^3}{4b^2c} = \dfrac{4a^3b^2c}{4b^2c} - \dfrac{12b^2c^3}{4b^2c} = a^3 - 3c^2$

3. $4a^3b^2c - 12b^2c^3 = 4b^2c(a^3 - 3c^2)$ *Answer*

Factor completely using the GCF of each expression.

9. $10y^3 - 5y^2 + 15y$

10. $\pi r^2 h + 2\pi r^2$

11. $\frac{1}{2}bh - \frac{1}{2}ah$

12. $14s^2 + 7st$

13. $24a^4x - 18a^3x + 12a^2x^2$

14. $7s^2y - 21xy^2$

15. $8a^2b - 16ab - 24a$

16. $25c^3d - 15c^2d^2 + 5cd^3$

17. $-40r^8s^6 - 16r^9s^5$

18. $21e^3k - 49e^2k^2 + 84k^3$

19. $126w^2x^3yz + 210w^3y^4z^2$

20. $231a^4b^3c^2d - 143ab^2c^3$

Summer Review Packet Answer Key
7th Grade Pre-Algebra Honors

SP #1
1. −25
2. 4
3. −20
4. 26
5. 9
6. -49
7. 210
8. 16
9. −36
10. 8
11. −10
12. -81
13. −96
14. 18
15. −11
16. 2
17. −72
18. -4
19. −530
20. 6
21. −17
22. -29
23. −9
24. 900
25. 140
26. -15
27. −1
28. -64
29. 20
30. -5
31. −40
32. -60

SP #2
25. 25 + 5c
26. −8y - 16
27. 9m + 9
28. −6a − 15
29. 4y + 12z
30. 8a + 12b
31. 3 (3y + 7)
32. 7 (2a + 5b)
33. 3 (x + 7y + 4z)
34. 7 (m + 6n)
35. c (10 + 1)
36. 3 (3 + 7z)
37. 2 (4a + 3b + 5c)
38. 5 (2x + 5y + 6)
39. 4 (9 + 18s + t)
40. 23c
41. 7x + 8y
42. $5a^2 + 9a + 16$
43. 16m + 16n
44. 5z + 9
45. 10y
1. 4x − 7
2. ½ n + 11
3. 2w − 6
4. 3z + ½ x
5. 14y + 5
6. ½ (n − 15)
7. 2 (x + 5)
8. $\frac{x}{-5}$ - 4
9. x + 36 = 15; x = -21
10. x = 129
11. 292 = x + 17; x = 275
12. $.96 per bracelet
13. 28 = .8x; x = 35
14. $35.00

SP #3
1. 0.19
2. 1.3
3. 0.0005
4. .0165
5. 0.24
6. 60%
7. 70%
8. 125%
9. 5%
10. 150%
11. 61.5%
12. 20
13. 60
14. 224%
15. 4
16. 1.7
17. 0
18. 8
19. 5.2
20. .3
21. 9.1
22. 37
1. 111
2. 4
3. 2.2
4. 30%
5. 60%
6. 75%
7. 25%
8. 200
9. 87.5
10. 300
11. 88
12. Corduroy = $24
    Jeans = $18
13. 7 days
14. $18 discount
    $27 sale price
15. $147 discount
    $2,303 sale price

SP #4
1. 12x − 2
2. −4x + 30
3. 8x − 8y
4. 10x − 54
5. 39x + 1
6. 31a + 5
7. 36x − 30
8. 9y − 16
9. −29a + 38b − 3
10. −x + 2y + 12
1. −1
2. 9
3. 18
4. 2
5. 9
6. 2
7. −5
8. 2
9. −1
10. 18
11. −1
12. 3

SP #5
1. −2a − 24
2. −8 + 9y
3. −4t + 8
4. a + 5b
5. 5x + 8
6. y = -3
1. x = -1
2. z = 2
3. y = 5
4. x = 1
5. $a = 8\frac{4}{7}$
6. y = -3
7. m = 7
8. y = -44
9. x = 2
10. a = 33
11. x = 4
12. r = 21
13. w = -2
14. y = -3
15. x = -4
16. y = 2
17. a = 10
18. x = 2

SP #6
1. x = 28
2. y = 23
3. u = 13
4. y = 7
5. y = -3
6. $y = \frac{2}{5}$
7. y = 10
8. n = 35
9. x = 36

SP #7
1. 3 (c + 1.75) + 5c
2. g + (g + 114)
3. x + (x+1) + (x+2)
4. $n + \frac{n+1}{2}$
5. 27, 28, 29
6. 51, 53, 55
7. 5, 10, 20
8. $b = \frac{A}{2c}$
9. $C = \frac{A}{2b}$
10. s = Rt
11. $t = \frac{s}{R}$
12. $y = \frac{w-3z}{3}$
13. $z = \frac{w-3y}{3}$
14. $r^2 = \frac{A}{\pi}$
15. $\pi = \frac{A}{r^2}$
16. $b = \frac{2A}{h}$
17. $h = \frac{A}{2b}$
18. $m = \frac{E}{c^2}$
19. $c^2 = \frac{E}{m}$
20. b = 3A − a − c
21. c = 3A − a − b
22. $t = \frac{3k}{v}$
23. $C = \frac{ab}{P}$

SP #8
1. 9
2. 15
3. 8
4. 35
5. 33
6. 24
7. 65
8. 21
9. 5
10. 16
11. 6
12. 35
13. 52 girls
14. 32 pages
1. $-3\frac{3}{4}$
2. $-5\frac{1}{15}$
3. $2\frac{1}{6}$
4. $-2\frac{13}{30}$
5. $-7\frac{9}{20}$
6. $\frac{5}{12}$
7. $-4\frac{19}{48}$
8. $-5\frac{5}{18}$
9. $-7\frac{7}{20}$
10. $-9\frac{1}{36}$
11. $9\frac{13}{33}$
12. $-\frac{1}{18}$
13. $-1\frac{1}{2}$
14. $-1\frac{7}{24}$

SP #9
1. $x > -6$
2. $x \geq -3$
3. $x \leq 10\frac{1}{2}$
4. $y < 5$
5. $a > 4$
6. $y \geq 1$
7. $x < 4$
8. $x \leq -25$
9. $x < 6$
40. 678,100
41. .02001
42. .0000761
43. 3,114
44. $6.821 \cdot 10^6$
45. $8.10001 \cdot 10^{-1}$
46. $6.71 \cdot 10^{-6}$
47. $2.631 \cdot 10^3$

SP #10
1. 5^{12}
2. t^5
3. 4^{14}
4. n^{10}
5. a^7
6. $7x^3y^4$
7. $x^{13}y$
8. $\frac{1}{(2x)^7}$
9. 1
10. $\frac{1}{6^3}$

SP #10 (continued)
11. $\frac{1}{x}$ 12. $\frac{3}{y^2}$
13. $\frac{1}{m^4}$ 14. $\frac{7}{y}$
16. $\frac{1}{5a}$ 16. 1
17. 1 18. $\frac{6}{y^3}$
19. $8t^{12}$
20. $-27x^6$
21. $a^{30}b^{42}c^6$
22. $81a^4b^8$
23. $16a^6$
24. $49x^4y^6z^2$
25. $\frac{x^6}{y^4}$
26. $\frac{a^8}{16}$
27. $\frac{9}{25y^4}$
28. $15m^2$
29. $-112y^3$
30. $-3x^7$
31. $-6a^{11}$
32. x^3y^7
33. $10a^3b^2$
34. x^{12}
35. 1
36. $5m^3$
37. $4x^2$
38. a^3
39. $5ab^3$
40. $3x$
41. $-4b^6$
42. $-\frac{5a^6}{7b^2}$
43. 1
44. $\frac{1}{2ab}$
45. $\frac{a^2}{3b}$
46. $5x^2y^3$
47. $\frac{-3p^2}{r}$
48. $\frac{a^4}{2}$
49. y^2
50. $\frac{1}{2mn^6}$

SP #11
1. $4x^2 - 6x + 1$
2. $9x^4 + 3x^3 + 5x^2 + 1$
3. $-5x^4 + 2x^2 + 1$
4. $14x^3 + 5x^2 + 6x - 5$
5. $2x^2 - 7$
6. $3a^2 - 10a + 7$
7. $m^2n + mn + m - 14$
8. $11x^2y + 6xy - 4x^2 - 4y^2 + 15$
9. $4t^3 + 5t^2 + 9t + 21$

1. $\frac{1}{y^4}$ 2. $\frac{5x^2}{y^2}$
3. $\frac{1}{4a}$ 4. X
5. c^4 6. $\frac{16b}{a^3}$

1. -5 2. 7
3. 8 4. 22
5. 110 6. 31
7. 9 8. 19
9. $\frac{1}{3}$ 10. $\frac{10}{11}$

SP #12

See next page

SP #13
1. 36 cm^2
2. $1,225 \text{ mm}^2$
3. 54 cm^2
4. 90 cm^2
5. 1.75 cm^2
6. 1.5 cm^2
1. $C = 37.68 \text{ cm}$
   $A = 113.04 \text{ cm}^2$
2. $C = 31.4 \text{ cm}$
   $A = 78.5 \text{ cm}^2$
3. $C = 12.56 \text{ cm}$
   $A = 12.56 \text{ cm}^2$
4. $C = 15.7 \text{ cm}$
   $A = 19.625 \text{ cm}^2$
5. $A = 60 \text{ cm}^2$
6. $A = 72 \text{ m}^2$
7. $A = 67.5 \text{ cm}^2$
8. $A = 116 \text{ cm}^2$
9. $A = 28.56 \text{ cm}^2$

SP #14
1. 315 cm^3
2. 60 m^3
3. 30 m^3
4. 96 m^3
5. 84.78 m^3
1. $V = 64 \text{ m}^3$
   $SA = 96 \text{ m}^2$
2. $V = 240 \text{ ft}^3$
   $SA = 256 \text{ ft}^2$
3. $V = 8.96 \text{ m}^3$
   $SA = 27.36 \text{ m}^2$
4. $V = 6154.4 \text{ cm}^3$
   $SA = 2066.12 \text{ cm}^2$
5. $V = 3617.28 \text{ mm}^3$
   $SA = 1431.84 \text{ mm}^2$

SP #15
m<AOD = 97°
m<AOB = 83°
m<SQR = 135°
m<P = 70°
m<XZY = 72°
m<ZYX = 46°
m<X = 62°
m<JNM = 129°
m<NLM = 39°
m<NLK = 141°
m<FOG = 33°
m<GOH = 57°
m<EOF = 147°
m<UVW = 48°
m<VWU = 42°
m<UWT = 26°

Graphing on the Coordinate Plane

*For the following points, tell the location on the coordinate plane.
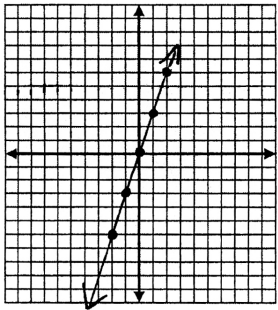 QI = Quadrant 1; QII = Quadrant 2; QIII = Quadrant 3; QIV = Quadrant 4
         Other choices: Origin; X axis; Y axis

1) (2, -4) Quadrant IV   2) (0, 8) Y axis   3) (6, 7) Quadrant I

4) (-12, -3) Quadrant III 5) (0, 0) Origin   6) (-5, 0) X axis

*Make a table of solutions for the following linear equations. Use –2, -1, 0, 1, 2 for x values. Then graph the solutions on the coordinate plane and create a line.
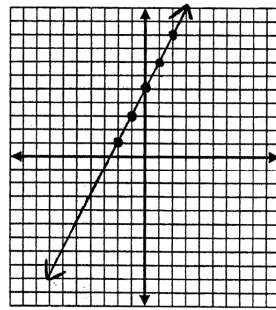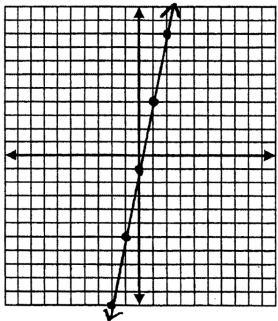
7)   y = 3x

X	-2	-1	0	1	2
Y	-6	-3	0	3	6

8)   y = 2x + 5

X	-2	-1	0	1	2
Y	1	3	5	7	9

9)   y = 5x – 1

X	-2	-1	0	1	2
Y	-11	-6	-1	4	9

10)   6x + 2y = -8   → y = -3x - 4

X	-2	-1	0	1	2
Y	2	-1	-4	-7	-10
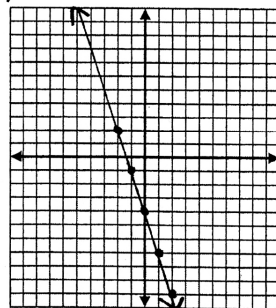
SP #16

1. $12x^2 - 20x$

2. $-8x^2 + 56x$

3. $7xy^3 - 14x^2y^2 + 7x^3y^2$

4. $6x^2y^2 + 15xy$

5. $18x^2y^2z - 27xy^2z^2 + 36x^2yz^2$

6. $-6ab^2 + 3a^4b$

7. $-15a^3 + 15a^2b - 45a^2c$

8. $-6a^5x^2 - 3a^3bx^2 + 3a^2x^3$

9. $5y(2y^2 - y + 3)$

10. $\pi r^2(h + 2)$

11. $\frac{1}{2} h(b - a)$

12. $7s(2s + t)$

13. $6a^2x(4a^2 - 3a + 2x)$

14. $7y(s^2 - 3xy)$

15. $8a(ab - 2b - 3)$

16. $5cd(5c^2 - 3cd + d^2)$

17. $8r^8s^5(-5s - 2r)$ or $-8r^8s^5(5s + 2r)$

18. $7k(3e^3 - 7e^2k + 12k^2)$

19. $42w^2yz(3x^3 + 5wy^3z)$

20. $11ab^2c^2(21a^3bd - 13c)$