Summer Math Practice

Review of Accelerated Math 6 (Incoming 7 Accelerated)

West Rocks School is pleased to provide you with a variety of suggested summer math activities, designed for students to practice and review skills that are necessary to be ready for the next grade level in math. These activities are a school requirement, and are offered as a way to help students who want to ensure they have a solid grasp of the math concepts they learned **this school year.**

Enclosed you will find a variety of skill-based math problems that review the main concepts from your child's math course this past school year, along with an answer key. Each concept has been paired with sections from IXL that students can use for additional practice. As an added resource, IXL provides a worked out solution for every problem with explanations to aid students in correcting their mistakes. There are 3 links, you can navigate through the first or directly to the 6th/7th grade level page.

IXL: https://www.ixl.com/signin/norwalkps   or go directly to https://www.ixl.com/math/grade-6 and https://www.ixl.com/math/grade-7

> *The username for IXL is the same as the students' username for school with @norwalkps added to the end. The password for IXL is the students' ID number, which is also their lunch pin number.*

A wealth of additional resources and activities can be found on the West Rocks Mathematics website, which is located on the West Rocks website under *Academics–Summer Learning-Mathematics*. You do not need to be logged into the school website to have access to these resources.

Operations with Fractions

Solve. Express your answers in the simplest form.

a) $7\frac{2}{3} + 2\frac{7}{12} =$ _____

b) $9\frac{1}{5} - 4\frac{7}{10} =$ _____

c) $8\frac{6}{7} + 1\frac{3}{5} =$ _____

d) $7\frac{1}{3} - 2\frac{5}{9} =$ _____

e) $5\frac{1}{4} \times 3\frac{1}{7} =$ _____

f) $8\frac{1}{3} \div 3\frac{3}{4} =$ _____

g) $2\frac{5}{8} \times \frac{4}{7} \times 12 =$ _____

h) $2\frac{5}{8} \div 3\frac{3}{4} =$ _____

i) George is making 8 gallons of Tropical Trip punch. He has already poured in $1\frac{3}{4}$ gallons of pineapple juice and $2\frac{1}{2}$ gallons of orange juice. The only other ingredient is 7-Up. How much 7-Up does George need?

j) Rachel buys $3\frac{7}{10}$ pounds of flour and Danielle buys $2\frac{3}{4}$ pounds of flour. They use $4\frac{3}{5}$ pounds of the flour to bake bread. How much of the flour is left?

k) Martha likes to walk around a park near her house. The park is square, $\frac{7}{10}$ mi on each side. One morning she walked around the park $3\frac{1}{2}$ times before stopping to rest. How far had she walked?

l) Farmer Brown can harvest $2\frac{1}{3}$ acres of corn in one day. How many days will it take him to harvest $10\frac{1}{2}$ acres of corn?

IXL strands Links: Mixed number operations

<u>Operations with Decimals</u>

Solve. Express your answers in the simplest form.

      a) $9.23 + 12.089 =$ _____   b) $38.7 - 9.25 =$ _____

      c) $96.7 + 37.367 =$ _____   d) $67.15 - 24.302 =$ _____

      e) $0.78 \times 3.6 =$ _____   f) $0.75 \div 0.4 =$ _____

      g) $5.7 \times 0.49 =$ _____   h) $0.504 \div 0.18 =$ _____

i) A U.S. penny weighs 0.1 oz. The smallest hummingbird on record was 2.24 inches long and weighed 0.056 oz. How much less than a penny did the hummingbird weigh?

j) A team of 4 students is running a 400-meter relay race. The first 3 runners had times of 14.79 seconds, 16.2 seconds, and 15.03 seconds. What time must the 4th runner beat in order for the total to be less than 60 seconds?

k) A chef buys 5.46 pounds of ground turkey to make some casseroles. Each casserole requires 0.13 pounds of turkey. How many casseroles can the chef make?

l) A pound of beans costs $4.70. Mrs. Patel buys 6.5 pounds of beans. How much does she pay for the beans?

IXL strands Links: Operations with Decimals

Comparing Numbers, Rounding Numbers, & Irrational Numbers

Compare. Write <, >, or =.

    a) 2.12 _____ 2.31   b) 0.37 _____ 0.317   c) $|21|$ _____ $|-21|$

Round each number.

    d) 2,549 to the nearest ten   e) 23.17 to the nearest tenth

Round 7,363.923

    f) to the nearest hundredth   g) to the nearest whole number.

Circle all the irrational numbers in each set of numbers.

    h) $\sqrt{4}$, 5, $\frac{1}{9}$, $\sqrt{2}$,-2.31, $\sqrt{7}$ i) $\frac{-19}{11}$, $-\sqrt{23}$,13, $\sqrt{8}$,3.001

Which two whole numbers is the square root between?

    j) $\sqrt{8}$ k) $\sqrt{32}$

Which two integers is the square root between?

    l) $-\sqrt{48}$ m) $-\sqrt{21}$

IXL strands: Identify Rational/Irrational numbers   Absolute Value of Rational numbers
Estimate square roots   Compare Rational numbers

<u>Rational Numbers</u>

Write each number in $\frac{m}{n}$ form where m and n are integers.

a) $3\frac{4}{6}$ b) -17   c) 7.5   d) -0.375

Use long division to write rational numbers as terminating decimals.

e) $\frac{3}{25}$ f) $2\frac{1}{8}$

Use long division to write rational numbers as repeating decimals.

g) $\frac{6}{11}$ h) $\frac{2}{9}$

Compare the positive rational numbers using the symbols < or >.

i) $\frac{3}{4}$ and $\frac{5}{6}$ j) $1\frac{7}{8}$ and $1\frac{8}{9}$

Compare the negative rational numbers using the symbols < or >.

k) $-\frac{3}{4}$ and $-\frac{4}{5}$ l) $-\frac{22}{7}$ and $-3\frac{1}{10}$

XL Strands:
Identify rational numbers – Level I – H.1
Convert between decimals and fractions or mixed numbers – Level I – H.2
Convert between decimals and fractions – Level K – A.5

Adding, Subtracting, Multiplying, & Dividing Integers

Evaluate.

a) 18 + (-39) =

b) 62 + (-18) =

c) (-19) + (-32) =

d) 14 + (-20) + (-6) =

e) 16 + (-54) + 23 =

f) (-45) + (-27) + (-41) =

g) 28 – (-15) =

h) -14 – (-12) =

i) -3 – (-6) – 10 =

j) 7(-9) =

k) (-7)(-15) =

l) 4(-6)(10) =

m) 357 ÷ (-7) =

n) (-550) ÷ 11 =

o) (-189) ÷ (-9) =

p) A submarine was cruising at a depth of 340 feet below sea level. Find the depth of the submarine after it ascends 76 feet.

q) A diver was swimming at a depth of 28 feet below sea level. He then dove 35 feet further. What is his new depth relative to sea level?

r) A hot air balloon descended 2,250 feet in 15 minutes. Find the change in altitude per minute.

IXL Strands:
Integer addition and subtraction rules - Level I - E.1
Add and subtract integers using counters - Level I - E.2
Add and subtract integers - Level I - E.3
Integer multiplication and division rules - Level I - E.6 & Level J – C.6
Multiply and divide integers - Level I - E.7 & Level J – C.7
Add and subtract integers: word problems - Level I - E.5

Operations with Integers, Rational Numbers, and Decimals

Evaluate.

a) $150 \div (-5) + (-38) =$

b) $-48 \div 4(-5) - 17 =$

c) $90 \div (-6 - 3) + 45 =$

d) $36 \div 6 - (-25 + 15)(4) =$

e) $\frac{-8}{3} + \frac{1}{4} =$

f) $\frac{1}{6} - \frac{-2}{3} =$

g) $\frac{-2}{5} - \frac{-3}{4} - \frac{5}{8} =$

h) $\frac{-3}{4} \cdot \frac{5}{12} =$

i) $-2\frac{2}{3} \cdot -3\frac{3}{4} =$

j) $\frac{2}{5} \div \frac{-4}{35} =$

k) $1\frac{2}{3} \div -3\frac{1}{3} =$

l) $-3.15 + 7.9 =$

m) $8.22 - (-0.355) =$

n) $-2.7 \cdot 3.1 =$

o) $-36.9 \div 4.5 =$

p) $-49.14 \div (-6.3) =$

IXL Strands: In 6th grade,
Add and subtract rational numbers – Level J – E.2 & Level K – B.4
Multiply and divide rational numbers – Level J – E.4, Level H – D.5, Level K – B.5
Add and subtract rational number word problems – Level J – E.3
Multiply and divide rational numbers word problems – Level J – E.5
Operations with decimals – Level K – B.6

Simplifying Algebraic Expressions

Simplify.

a) $1.4p + 0.3p =$

b) $0.8m + 2.7m =$

c) $\frac{2}{5}y + \frac{3}{10}y =$

d) $3.2a - 2.9a =$

e) $1.3b - 0.9b =$

f) $\frac{5}{6}x - \frac{4}{5}x =$

g) $6.3q - 1.8 - 5.7q =$

h) $9b - 2a + 3b - a =$

i) $6.4m + 2.3n - 5.7m - 0.7n =$

j) $\frac{8}{9}x - \frac{4}{5}y - \frac{2}{3}x - \frac{1}{2}y =$

k) $6.9a - 4.9b - 7.8a - 0.4b =$

IXL Strands:
Simplify algebraic terms – Level J – T.7
Add &subtract algebraic terms – Level I - U.6 & Level J – T.6

Expanding, Factoring, & Writing Algebraic Expressions

Expand. Simplify whenever possible.

a) $\frac{1}{4}(8x + 16) =$

b) $\frac{1}{2}(14k - 10) =$

c) $5(0.3y + 2) =$

d) $0.5(p - 3) =$

e) $-3(x + 2) =$

f) $-7(4k - h) =$

g) $3(x + 8) + 5x =$

h) $12p + 10(p - 2q) =$

i) $7(2a + b) + 2(3a + b) =$

j) $4(2m - n) + 8(3n - m) =$

k) $5(3d + e) - 4(d - 4e) =$

l) $6(4q - p) - (2q - 5p) =$

Factor.

m) $3x + 15 =$

n) $4x - 28 =$

o) $35c - 15d =$

p) $-2a - 4 =$

q) $-24x - 18y =$

r) $7a - 14b - 28 =$

Translate each verbal description into an algebraic expression. Simplify the expression when you can.

s) The sum of one-half t and one-third u = _____

t) The product of 5r and 7 divided by 15 = _____

IXL Strands:
Expanding algebraic terms – Level I – Y.2 & Level J – AA.2 & Level H – P.19
Greatest common factor – Level H – N.7 & Level I – A.5
Writing algebraic expressions – Level I – U.1 & Level J – T.1

Algebraic Equations

Tell whether each pair of equations are equivalent.

    a) $4x + 1 = 9$ and $2x + 1 = 5$ b) $3p - 4 = 8$ and $2p = 4$

Solve each equation.

    c) $9p + 5 = -13$ d) $23 = 6x - 1$

    e) $5.7 + 0.3y = 6.9$ f) $3.8x - 6.7 + 5.2x = 11.3$

    g) $21b + 9 = 15b + 3$ h) $5x - 11 = 12x + 10$

    i) $4(3x - 2) = 16$ j) $5(2 - 3y) - 9y = 4(3 - 2y)$

    k) $\frac{4}{5}(m - 1) - \frac{1}{5}m = 1$

Write and solve the equation.

l) Tasha had x dollars. After Sam gave her $27, she had $139. How much money did she have initially?

m) The perimeter of an isosceles triangle is 32.7 inches. If the length of its base is 9.5 inches, find the length of the other two sides.

n) Mr. Sidney rented a car for one day. The rental fee consists of a flat rate of $19.99 plus $0.21 per mile. For how many miles did Mr. Sidney drive the car if he paid $52.54 for the car rental?

o) On a 3-week vacation to Paris, Martha's expenses for food, gifts, and accommodations was $80 less than three times her airfare. If the total expenses for the trip were $2,660, how much was her airfare?

IXL Strands:
Solve equations involving like terms – Level I – V.5 & Level H – U.8
Solve two-step equations – Level J – U.5
Solving multistep equations Level I – V.4, Level J – U.7

<u>Solving Algebraic Inequalities</u>

Solve each inequality. Then graph each solution set on a number line.

    a) $4x + 5 \geq 29$ b) $6y + 1 > 7$

    c) $3p + 1 \leq -1$ d) $9 \geq 12 - x$

    e) $3x + 3 > 7 + x$

Solve each inequality.

    f) $11 + x \leq 7 + 5x$ g) $2.8x + 7 \geq 4.8x + 9$

    h) $6(2y - 1) \geq 3.6$ i) $2(9 - x) \leq 16 - x$

    j) $7(2a - 3) \leq 5 - 2(3a - 1)$

Write and solve the inequality.

k) Andrew has scores of 70, 75, 83, and 80 on four Spanish quizzes. What score must he get on the next quiz to achieve a quiz average of at least 80?

l) Howard is saving to buy a mountain bike that costs $245. He has already saved $28. What is the least amount of money Howard must save each week so that at the end of the 9th week, he has enough money, excluding tax, to buy the bike? Round your answer to the nearest dollar.

IXL Strands:
Solve one-step inequalities – Level I – W.4 & Level J – X.4
Graph solutions for one-step inequalities Level I – W.5 & Level J - X.5
Solve two-step inequalities - Level I – W.6 & Level J – X.6
Graph solutions for two-step inequalities – Level I – W.7 & Level J – X.7

<u>Direct Proportion</u>

Tell whether y is directly proportional to x. If so, find the constant of proportionality and write the direct proportion equation.

a)

x	1	2	3
y	18	36	54

b)

x	1	3	5
y	9	27	55

Tell whether each equation represents a direct proportion. If so, identify the constant of proportionality.

   c) $3m = 5n$

   d) $4y = x + 1$

Tell whether each graph represents a direct proportion. If so, find the constant of proportionality. Then write a direct proportion equation.

   e)
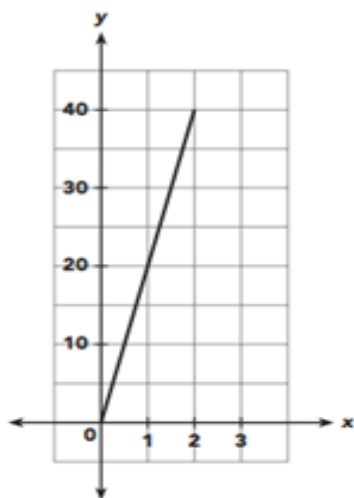
   f)
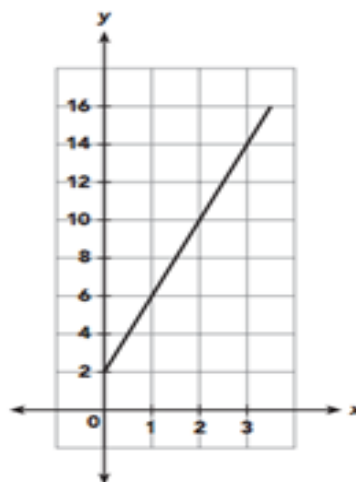
g) m varies directly as n, and m = 18 when n = 6. Write an equation that relates m and n. Find m when n = 3. Find n when m = 36.

h) y varies directly as x, and y = 5 when x = 10. Write an equation that relates y and x. Find y when x = 8. Find x when y = 25.

i) For every $150 that Susan earns, she donates $20 to a charity. Last month, Susan donated $32 to a charity. How much did she earn last month?

j) There are 243 milligrams of calcium in 54 grams of an energy drink powder. Mr. Trollman used 30 grams of energy drink powder to make a drink. How many milligrams of calcium did the drink contain?

IXL Strands:

Solve proportions – Level I - J.8   Solve proportions: word problems – Level I - J.9
Identify proportional relationships – Level J – I.1   Find the constant of variation: graphs – Level J – I.2
Graph a proportional relationship – Level J – I.4   Write direct variation equations – Level K – R.4
Find the constant of variation: word problems – Level J – I.3
Write an equation for a proportional relationship – Level J – I.5
Identify direct variation and inverse variation – Level K – R.6
Write inverse variation equations – Level K – R.7

Complementary & Supplementary Angles

Angles ABD and DBC are complementary. Find the value of x.

a)

b)
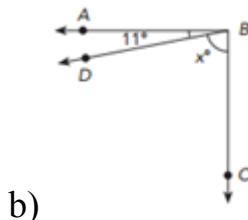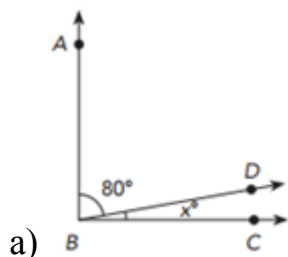
Angles PQS and SQR are supplementary angles. Find the value of m.

c)

d)
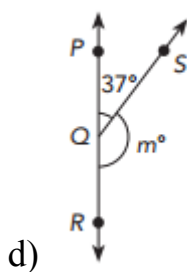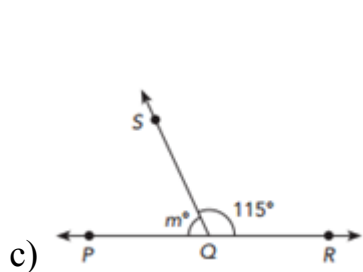
The measure of angle PQR is 90 degrees. Find the value of x.

e)

f)
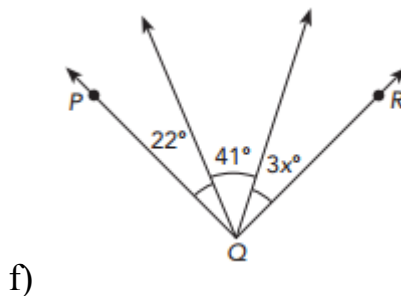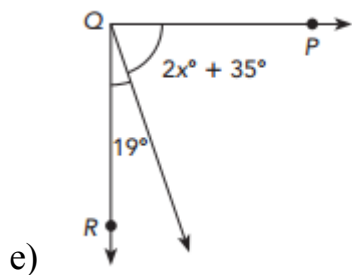
PQ is a straight line. Find the value of m.

g)
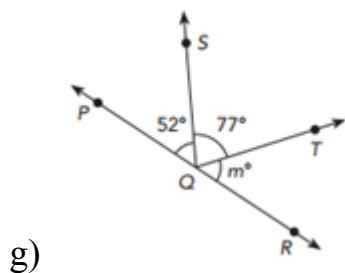
> **IXL Strands:**
> Identify complementary, supplementary, vertical, adjacent, and congruent angles – Level I – P.4
> Find measures of complementary, supplementary, vertical, and adjacent angles – Level I – P.5

Angles That Share a Vertex, Alternate Interior, Alternate Exterior, & Corresponding Angles

Find the value of x.
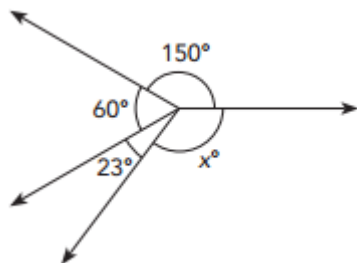
a)
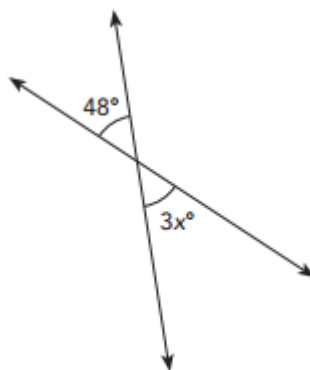
b)

Use the diagram below to answer c-e.
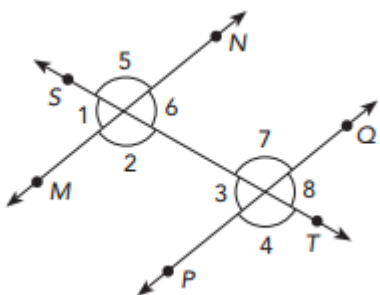
c) Name a pair of alternate interior angles

d) Name a pair of alternate exterior angles

e) Name a pair of corresponding angles

f) AB is parallel to CD. Find the measure of each numbered angle.
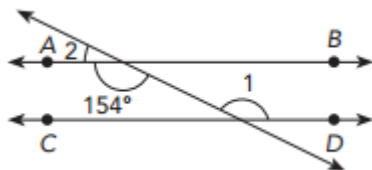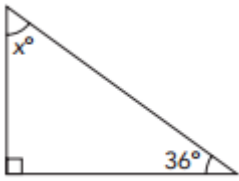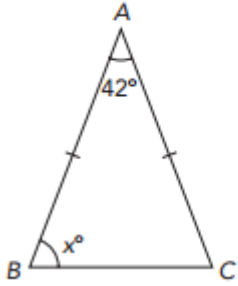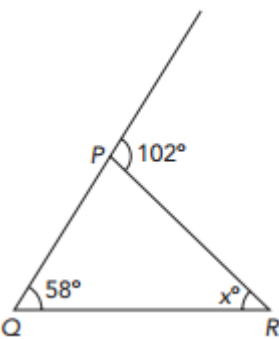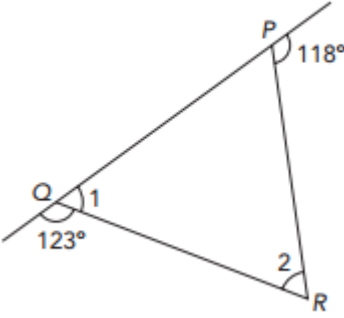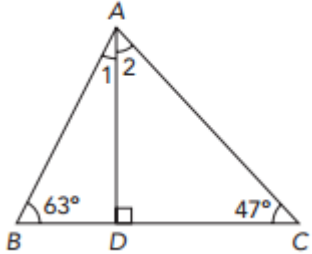
IXL Strands:
Transversal of parallel lines – Level I – P.6
Find missing angles in triangles and quadrilaterals (triangles only) – Level I – P.9

Interior and Exterior Angles of a Triangle

Find the value of x.

ABC is an isosceles triangle.

a)

b)

c)

d)

e)

IXL Strands:
Find missing angles in triangles and quadrilaterals (triangles only) – Level I – P.9

Additional IXL Topics

These are other topics that were either touched on or reviewed in Advanced Math 6 that students may find helpful to review to improve their math skills before starting 7th grade.

Level H

Z.23 = Area
Z.29 = Circles: calculate area, circumference, radius and diameter
Z.36 = Volume of cubes and rectangular prisms
Z.37 = Surface area of cubes and rectangular prisms
Z.38 = Volume and surface area of triangular prisms

Level I

K.5 = Percent of numbers and money amounts
K.6 = Percent of numbers: word problems
K.9 = Percent of change
J.1 = Understanding ratios
J.3 = Equivalent ratios
J.4 = Compare ratios: word problems
J.6 = Unit rates
P.2 = Parallel, perpendicular and intersecting lines
P.3 = Name, measure and classify angles
P.22 = Circles
P.26 = Names and bases of 3D figures
P.28 = Surface area
S.1 = Points on the coordinate graph

Level J

Q.26 = Surface area of prisms and cylinders
Q.27 = Surface area of pyramids and cones
Q.28 = Volume of prisms and cylinders
Q.20 = Volume of pyramids and cones
Q.30 = Volume and surface area of spheres

Answer Key

Operations with Fractions

a) $10\frac{1}{4}$

b) $4\frac{1}{2}$

c) $10\frac{16}{35}$

d) $4\frac{7}{9}$

e) $16\frac{1}{2}$

f) $2\frac{2}{9}$

g) 18

h) $\frac{7}{10}$

i) $3\frac{3}{4}$ gallons

j) $1\frac{17}{20}$ pounds

k) $9\frac{4}{5}$ miles

l) $4\frac{1}{2}$ days

Operations with Decimals

a) 21.319

b) 29.45

c) 134.067

d) 42.848

e) 2.808

f) 1.875

g) 2.793

h) 2.8

i) 0.044 ounces

j) 13.98 seconds

k) 42 casseroles

l) $30.55

Comparing Numbers, Rounding Numbers, and Irrational Numbers

a) <

b) >

c) =

d) 2,550

e) 23.2

f) 7,363.92

g) 7,364

h) $\sqrt{2}, \sqrt{7}$

i) $-\sqrt{23}, \sqrt{8}$

j) 2 and 3

k) 5 and 6

l) -7 and -8

m) -4 and -5

Rational Numbers

a) $\frac{11}{3}$

b) $\frac{-17}{1}$

c) $\frac{15}{2}$

d) $\frac{-3}{8}$

e) 0.12

f) 2.125

g) $.\overline{54}$

h) $.\overline{2}$

i) <

j) <

k) >

l) <

Adding, Subtracting, Multiplying, & Dividing Integers

a) -21

b) 44

c) 51

d) -12

e) -15

f) -113

g) 43

h) -2

i) -7

j) -63

k) 105

l) -240

m) -51

n) -50

o) 21

p) 264 feet below sea level or -264 ft

q) 63 feet below sea level or -63 ft

r) -150 ft per minute

Operations with Integers, Rational Numbers, and Decimals

a) -68

b) -14.6

c) 35

d) 46

e) $-2\frac{5}{12}$

f) $\frac{5}{6}$

g) $\frac{32}{45}$

h) $\frac{-5}{16}$

i) 10

j) $-3\frac{1}{2}$

k) $\frac{-1}{2}$

l) 4.75

m) 8.575

n) -8.37

o) -8.2

p) 7.8

Simplifying Algebraic Expressions

a) 1.7p
b) 3.5m
c) $\frac{7}{12}y$
d) 0.3a
e) 0.4b
f) $\frac{1}{30}x$
g) 0.6q - 1.8
h) 12b - 3a
i) 0.7m + 1.6n
j) $\frac{2}{9}x - \frac{13}{10}y$
k) -0.9a - 5.3b

Expanding, Factoring, & Writing Algebraic Expressions

a) 2x + 4
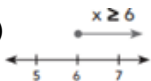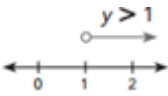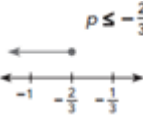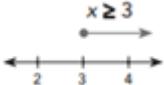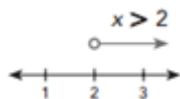b) 7k - 5
c) 1.5y + 10
d) 0.5p - 1.5
e) -3x - 6
f) -28k + 7h
g) 8x + 24
h) 22p - 20q
i) 20a + 9b
j) 20n
k) 11d + 21e
l) 22q - p
m) 3(x + 5)
n) 4(x - 7)
o) 5(7c - 3d)
p) -2(a + 2)
q) -6(4x + 3y)
r) 7(a - 2b - 4)
s) $\frac{t}{2} + \frac{s}{3}$
t) $\frac{7r}{3}$

Algebraic Equations

a) Yes, they are equivalent
b) No, they are not equivalent
c) p= -2
d) x = 4
e) y = 4
f) x = 2

g) b = -1
h) -3 = x
i) x = 2
j) y = $-\frac{1}{8}$
k) m = 3
l) x = $112
m) The length of each side is 11.6 in.
n) Mr. Sidney drove the car 155 mi.
o) She paid $685 for her airfare.

Algebraic Inequalities

a)

b)

c)

d)

e)

f) x ≥1
g) x ≤-1
h) y > 0.8
i) x ≥ 2
j) a ≤ $\frac{7}{5}$
k) He must get at least a 92 on the next quiz to have an average of at least 80.
l) Howard must save at least $25 each week from his earnings.

Direct Proportion

a) yes, 18, y = 18x
b) no
c) yes, 5/3
d) no
e) yes, 20, y = 20x
f) no
g) m = 3n, m = 9, n = 12
h) y = .5x, y = 4, x = 50
i) $240
j) 135 mg

Complementary & Supplementary Angles

a) x =10
b) x = 79
c) m = 65
d) m =143
e) x = 18
f) x = 9
g) m=51

Angles That Share a Vertex, Alternate Interior, Alternate Exterior, & Corresponding Angles

a) x = 127
b) x = 16
c) 3 & 6 or 2 & 7
d) 5 & 4 or 8 & 1
e) 1 & 3, 5 & 7, 6 & 8, or 2 & 4
f) Angle 1 = 154 degrees and Angle 2 = 26 degrees

Interior and Exterior Angles of a Triangle

a) x = 54
b) x = 69
c) x = 44
d) angle 1 = 57 and angle 2 = 61
e) angle 1 = 27 and angle 2 = 43