Mathematics Review
Notes for Parents and Students

Grade 6 Mathematics
2nd Nine Weeks, 2013-2014
SOL 6.7 (calculator may be used)
The student will solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division of decimals.

Solve single-step and multistep practical problems involving addition, subtraction, multiplication and division with decimals expressed to thousandths with no more than two operations.

- Different strategies can be used to estimate the result of computations and judge the reasonableness of the result.
  
  For example:
  
  \[23.8 \div 7.7 = \text{The answer is around 3 because...} \ 24 \div 8 = 3.\]
  
  \[2.19 \div 0.8 = \text{The answer is around 2 because...} \ 2 \div 1 = 2.\]
  
  \[4.92 \cdot 3.2 = \text{The answer is around 15 because...} \ 5 \cdot 3 = 15.\]
  
  \[27.87 - 13.124 = \text{The answer is around 15 because...} \ 28 - 13 = 15.\]
  
  \[52.12 + 17.84 = \text{The answer is around 70 because...} \ 52 + 18 = 70\]

- Understanding the placement of the decimal point is very important when finding quotients of decimals. Examining patterns with successive decimals provides meaning, such as ...

  \[
  \begin{align*}
  19.5 \div 60 & = 0.325 \\
  19.5 \div 6 & = 3.25 \\
  19.5 \div 0.6 & = 32.5 \\
  19.5 \div 0.06 & = 325 \\
  19.5 \div 0.006 & = 3,250 
  \end{align*}
  \]

- Solving multistep problems in the context of real-life situations enhances interconnectedness and proficiency with estimation strategies.

- Examples of practical situations solved by using estimation strategies include shopping for groceries, buying school supplies, budgeting an allowance, deciding what time to leave for school or the movies, and sharing a pizza or the prize money from a contest.
EXAMPLE 1:

Jane went to the store for groceries. She spent $8.95 on meat and $4.75 on vegetables. She paid with a $20.00 bill. How much change did she receive?

Step 1

\[
\begin{array}{c}
8.95 \\
+ 4.75 \\
\hline
13.70
\end{array}
\]

Step 2

\[
\begin{array}{c}
20.00 \\
-13.70 \\
\hline
6.30
\end{array}
\]

She received $6.30 change.

EXAMPLE 2:

Myah drove 245.2 miles in the morning and 209.3 miles in the afternoon. On her trip she drove for a total of 7.5 hours. How many miles did she drive each hour?

Step 1

\[
\begin{array}{c}
245.2 \\
+ 209.3 \\
\hline
454.5
\end{array}
\]

Step 2

\[
454.5 \div 7.5 = 60.6
\]

She drove 50.5 or 50½ miles each hour.

EXAMPLE 3:

Each soda had 4.25 oz of sugar. If Sam drank 4.5 sodas, how many ounces of sugar did he drink?

\[
4.25 \cdot 4.5 = 19.125
\]

He drank 19.125 or 19⅛ ounces of sugar.

EXAMPLE 4:

The relay race was 16.5 miles long. Jon ran 5.5 miles and Sonjay ran 8.25 miles. How many miles were left for Alec to run?

\[
16.5 \quad Jon \quad Sonjay \quad Alec
\]

5.5 + 8.25 = 13.75  16.5 – 13.25 = 2.75  Alec had to run 2.75 miles.
Decimal Computation, SOL 6.7

1. Items Gwen Purchased

<table>
<thead>
<tr>
<th>Item</th>
<th>Number of Items</th>
<th>Cost per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sketchpad</td>
<td>5</td>
<td>$2.99</td>
</tr>
<tr>
<td>Paintbrush</td>
<td>2</td>
<td>$5.99</td>
</tr>
<tr>
<td>Box of chalk</td>
<td>1</td>
<td>$15.99</td>
</tr>
</tbody>
</table>

Which could be used to determine the total amount of money Gwen spent before tax?

F Multiply the cost per item by the number of items, then add the products
G Divide the cost per item by the number of items, then multiply the quotients
H Divide the cost per item by the number of items, then add the quotients
J Multiply the cost per item by the number of items, then multiply the products

2. Karl earns $8.50 per hour at his part-time job. Last week he worked 18 hours. This week he worked 14 hours. What is the total amount of money that Karl earned for working these two weeks?

F $119
G $153
H $261
J $272

3. Mrs. Chan purchased 2 oranges at lunch every day for 9 days. The oranges cost $0.49 each. To the nearest dollar, how much did Mrs. Chan pay for all the oranges?

A $1
B $5
C $9
D $18
4. The prices of the items in Alana’s grocery cart are pictured.

Alana has $10.00 to spend on the items. Which list of items could Alana purchase with her $10.00?

A 4 cans of soup, 1 loaf of bread, and 1 bottle of juice
B 1 loaf of bread, 3 bottles of juice, and 2 cans of soup
C 1 loaf of bread, 3 cans of soup, and 1 container of milk
D 2 cans of soup, 1 bottle of juice, and 1 container of milk

5. Every week Sam saves $1.00 on Monday and $2.50 on Friday. If this is his total weekly savings, how many weeks would it take him to save enough to buy a $49 wireless phone?

A 7 weeks
B 14 weeks
C 46 weeks
D 52 weeks

6. A carpet cleaning company charged $99.99 to clean 3 rooms in a house and $29.99 for each extra room. What is the total amount of money the company would charge to clean 5 rooms in the house?

F $189.96
G $159.97
H $149.95
J $129.98
7. The table shows the prices for CDs at 4 different stores.

<table>
<thead>
<tr>
<th>Store</th>
<th>Number of CDs</th>
<th>Total Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget Buy</td>
<td>4</td>
<td>$30.00</td>
</tr>
<tr>
<td>CD City</td>
<td>2</td>
<td>$15.99</td>
</tr>
<tr>
<td>Music Mall</td>
<td>3</td>
<td>$21.99</td>
</tr>
<tr>
<td>Shop Smart</td>
<td>1</td>
<td>$8.99</td>
</tr>
</tbody>
</table>

Which store has the lowest price per CD?

F  Budget Buy
G  CD City
H  Music Mall
J  Shop Smart

8. Alexis needs to buy 300 sheets of construction paper. The office supply store sells construction paper in the following packages.

<table>
<thead>
<tr>
<th>Package</th>
<th>Number of Sheets</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>50</td>
<td>$4.50</td>
</tr>
<tr>
<td>X</td>
<td>75</td>
<td>$5.10</td>
</tr>
<tr>
<td>Y</td>
<td>100</td>
<td>$10.75</td>
</tr>
<tr>
<td>Z</td>
<td>150</td>
<td>$12.25</td>
</tr>
</tbody>
</table>

Which of the following is the least expensive way for Alexis to buy 300 sheets of construction paper?

F  6 packages of paper W
G  4 packages of paper X
H  3 packages of paper Y
J  2 packages of paper Z
9.
Look at the table.

Cost of T-shirts

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Cost per T-shirt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al's T-shirt Shop</td>
<td>$6.99</td>
</tr>
<tr>
<td>T-shirt Connection</td>
<td>$7.49</td>
</tr>
</tbody>
</table>

How much more would a person pay for 4 T-shirts at T-shirt Connection than at Al's T-shirt Shop?

A. $0.50
B. $2.00
C. $20.47
D. $22.97

10.
The dimensions of a line segment are shown.

![Diagram of a line segment with points A, B, C, and D, and a measurement of 15.75 cm between A and D.]

What is the distance from point C to point D?

A. 5.25 cm
B. 9.75 cm
C. 11.25 cm
D. 15.75 cm

11.
Jake made punch by combining 2.75 liters of orange juice, 1.25 liters of pineapple juice, and 3.5 liters of soda. He then poured equal amounts of all the punch into 3 different containers. How much punch did Jake pour into each container?
6.5 (calculator may be used)
The student will investigate and describe concepts of positive exponents and perfect squares.

- In exponential notation, the base is the number that is multiplied, and the exponent represents the number of times the base is used as a factor. In $7^4$, 7 is the base and 4 is the exponent.

$$7^4 = 7 \times 7 \times 7 \times 7$$

- A power of a number represents repeated multiplication of the number by itself.

$$8^3 = 8 \times 8 \times 8$$ and is read “8 to the third power”

- Any real number other than zero raised to the zero power is 1.

Example: $15^0 = 1$
Example: $4^0 = 1$
Example: $1,3790 = 1$

- Perfect squares are the numbers that result from multiplying any whole number by itself

$1 \times 1 = 1$
$2 \times 2 = 4$
$3 \times 3 = 9$
$4 \times 4 = 16$
$5 \times 5 = 25$

The first 20 perfect squares are:

1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225, 256, 289, 324, 361, 400

- Perfect squares can be represented using grid paper.
• A square root of a number is a number which, when multiplied by itself, produces the given number.

\[ \sqrt{49} = 7 \]  
The square root of 49 is 7

\[ \sqrt{100} = 10 \]  
The square root of 100 is 10

\[ \sqrt{169} = 13 \]  
The square root of 169 is 13

• Patterns in place-value charts provide visual meaning of exponents:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(10^0) = 1</td>
<td>(6^0) = 1</td>
<td></td>
</tr>
<tr>
<td>(10^1) = 10</td>
<td>(6^1) = 6</td>
<td></td>
</tr>
<tr>
<td>(10^2) = 100</td>
<td>(6^2) = 36</td>
<td></td>
</tr>
<tr>
<td>(10^3) = 1000</td>
<td>(6^3) = 216</td>
<td></td>
</tr>
<tr>
<td>(10^4) = 10000</td>
<td>(6^4) = 1296</td>
<td></td>
</tr>
</tbody>
</table>
SOL Practice Items provided by the VDOE, [http://www.doe.virginia.gov/testing/sol/standards_docs/mathematics/index.shtml](http://www.doe.virginia.gov/testing/sol/standards_docs/mathematics/index.shtml)

Answers are located on the last page of the booklet.

Exponents and Perfect Squares, SOL 6.5

1. Based on the geometric pattern shown, what is the value of $8^5$?

$$
\begin{align*}
8^1 &= 8 \\
8^2 &= 64 \\
8^3 &= 512 \\
8^4 &= 4,096 \\
\end{align*}
$$

- A. 13
- B. 40
- C. 20,480
- D. 32,768

2. What is the square root of 100?

- F. 50
- G. 25
- H. 10
- J. 4

3. Which of the following is equivalent to $2^3$?

- A. $2 \times 3$
- B. $3 \times 3$
- C. $2 \times 2 \times 2$
- D. $2 \times 2 \times 2$

4. Tammy wrote the following values for powers of 10.

$$
\begin{align*}
10^2 &= 100 \\
10^3 &= 1,000 \\
10^4 &= 10,000 \\
10^5 &= 100,000 \\
\end{align*}
$$

Based on the pattern, which is equivalent to 100,000,000?

- A. $10^6$
- B. $10^7$
- C. $10^8$
- D. $10^9$

5. Based on the pattern shown, what is the value of $6^5$?

$$
\begin{align*}
6^1 &= 6 \\
6^2 &= 36 \\
6^3 &= 216 \\
6^4 &= 1,296 \\
\end{align*}
$$

- A. 1,308
- B. 2,592
- C. 36,000
- D. 46,656

6. Which is a perfect square between 81 and 121?

- A. 86
- B. 99
- C. 100
- D. 114

7. Gracie’s pattern of increasing perfect squares is shown below.

$$25, 36, ____ , 64, 81, 1000$$

What number does Gracie need to square the find the missing term?

- F. 5
- G. 6
- H. 7
- J. 8
8. Which of the following is *not* a perfect square?

   F  49  
   G  90  
   H  121 
   J  144 

9. Which of the following is equivalent to $6 \times 6 \times 6 \times 6 \times 6$?

   A  $36^6$  
   B  $30^6$  
   C  $6^6$   
   D  $5^6$   

10. Which of these is equivalent to $14 \times 14 \times 14$?

    ○ A  $3 \times 42$  
    ○ B  $14 \times 42$  
    ○ C  $3^{14}$  
    ○ D  $14^3$  

SOL 6.17 (calculator may be used)  
The student will identify and extend geometric and arithmetic sequences.

- **Arithmetic Sequences** - An Arithmetic Sequence is made by **adding** the same value each time.

  **Example:** 3, 8, 13, 18, 23, 28, 33, 38, ...

  This sequence has a difference of 5 between each number. The pattern is continued by **adding 5** to the last number each time.

  The value added each time is called the **"common difference"**

  What is the common difference in this example?

  19, 27, 35, 43, ...

  Answer: The common difference is **8**

  The common difference could also be negative, like this:

  25, 23, 21, 19, 17, 15, ...

  This common difference is **-2**

  The pattern is continued by **subtracting 2** each time.

- **Geometric Sequences** - A Geometric Sequence is made by **multiplying** the same value each time.

  **Example:**

  **Example:** 2, 4, 8, 16, 32, 64, 128, 256, ...

  This sequence has a factor of 2 between each number. The pattern is continued by **multiplying by 2** each time.
• **Special Sequences**

**Triangular Numbers**

1, 3, 6, 10, 15, 21, 28, 36, 45, ...

This sequence is generated from a pattern of dots which form a triangle.

By adding another row of dots and counting all the dots we can find the next number of the sequence:

![Triangular Numbers Diagram](image)

**Square Numbers**

1, 4, 9, 16, 25, 36, 49, 64, 81, ...

The next number is made by squaring where it is in the pattern.
- The second number is 2 squared ($2^2$ or $2 \times 2$)
- The seventh number is 7 squared ($7^2$ or $7 \times 7$) etc

**Cube Numbers**

1, 8, 27, 64, 125, 216, 343, 512, 729, ...

The next number is made by cubing where it is in the pattern.
- The second number is 2 cubed ($2^3$ or $2 \times 2 \times 2$)
- The seventh number is 7 cubed ($7^3$ or $7 \times 7 \times 7$) etc

**Fibonacci Numbers**

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, ...

This sequence is found by adding the two numbers before it together.
- The 2 is found by adding the two numbers before it (1+1)
- The 21 is found by adding the two numbers before it (8+13)
- The next number in the sequence above would be 55 (21+34)

Can you figure out the next few numbers?
Numerical and Geometric Patterns, SOL 6.17

1  The first four figures in a pattern are shown.

If the pattern continues by adding another row and column of dots to the previous group, how many dots will be in the next group?

A  30
B  35
C  36
D  40

2  What rule describes the sequence shown?

64, 16, 4, 1, ...

F  Multiply by 4
G  Subtract 48
H  Divide by 4
J  Add 3

3  Which pattern follows the rule below?

Divide by 3

A  105, 35, 32, 23, 20
B  108, 36, 18, 9, 3
C  120, 90, 60, 30, 10
D  162, 54, 18, 6, 2

4  Look at the table.

<table>
<thead>
<tr>
<th>Term</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>121</td>
</tr>
<tr>
<td>12</td>
<td>144</td>
</tr>
<tr>
<td>13</td>
<td>169</td>
</tr>
<tr>
<td>14</td>
<td>196</td>
</tr>
<tr>
<td>15</td>
<td>225</td>
</tr>
</tbody>
</table>

Which rule does Patrick's pattern follow?

A  Add 110 to the term to get the value.
B  Multiply 11 by the term to get the value.
C  Double the term to get the value.
D  Square the term to get the value.

5  Look at the table.

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>7</td>
<td>21</td>
</tr>
</tbody>
</table>

Which rule best describes the relationship between all the x and y values in the table?

F  Add 2 to the x-value to get the y-value.
G  Subtract 14 from the y-value to get the x-value.
H  Divide the y-value by 2 to get the x-value.
J  Multiply the x-value by 3 to get the y-value.

6  Jeff multiplied each term in the pattern below by the same number.

1, 4, 16, 64

If the pattern continues, what will be the 6th term?

A  64
B  112
C  256
D  1,024

7  405, 135, 45, 15

Dylan began his number pattern with 405. To determine each new number in the pattern, he performed the same operation on the previous number. Which operation could have been used for the pattern?

F  Divide by 3
G  Multiply by 3
H  Subtract 270
J  Divide by 5

8  Patty made a figure by drawing 4 small squares as shown below.

Patty then increased the size of the figure by adding 1 row and 1 column of small squares to get the next figure in the pattern. The next three figures in the pattern are shown below.

If Patty continues the pattern using the same rule, how many small squares will make up the 7th figure?

F  64
G  49
H  34
J  25
9
The first term in the following pattern is 1.
1, 7, 19, 43, 91
If the pattern continues in the same way, which rule could be used to get the next term in the pattern?
F Multiply by 2, and then add 5.
G Add 12.
H Multiply by 3, and then add 4.
J Add 6.

10
Luanne stacked some checkers in a triangular shape as pictured. Each row has 1 less checker than the previous row.

Luanne made another stack using the same pattern starting with 8 checkers in the bottom row. How many total checkers were in her new stack?
A 19 checkers
B 21 checkers
C 29 checkers
D 36 checkers

11
Kale wrote the number pattern shown.
1, 2, 4, 7, 11, ...
He noticed another pattern when he found that the differences between the numbers increased by 1 as shown below:

1 +1 2 +2 4 +3 7 +4
If the differences continue to increase by 1, what will be the 7th term in Kale's original pattern?
A 15
B 19
C 21
D 22

12
The first four figures in a pattern are shown.

If the pattern continues to double the number of dots, what will be the total number of dots in the 6th figure in the pattern?
A 128
B 64
C 32
D 14

13
If the arithmetic pattern shown continues, what will be the 8th number?
54, 48, 42, 36, ...
A 34
B 30
C 12
D 6

14
What is the 10th term in the increasing pattern shown?
1, 1, 2, 3, 5, 8, 13
F 144
G 89
H 55
J 34

15
Which could be the rule for the following pattern?
1,000  100  10  1  0.1  0.01
A Divide the previous number by 10.
B Multiply the previous number by 10.
C Subtract 900 from the previous number.
D Add 0.09 to the previous number.
The first four terms of a sequence are shown.

48, 24, 12, 6, . . .

This sequence is —

- A  a geometric sequence with a common ratio of $\frac{1}{2}$
- B  a geometric sequence with a common ratio of 2
- C  an arithmetic sequence with a common ratio of $\frac{1}{2}$
- D  an arithmetic sequence with a common ratio of 2
Testing Information

Midpoint Test, 2\textsuperscript{nd} Nine Weeks

The Midpoint Test will include questions from standards 6.7, 6.5, and 6.17 (included in this booklet), as well as questions from standards 6.4, 6.6, and 6.16, which were taught and tested earlier in the school year. Also refer to the 1\textsuperscript{st} Nine Weeks Parents’ and Students’ Review Notes to prepare for this test.

The 2\textsuperscript{nd} Nine Weeks Midpoint Test will be administered December 3\textsuperscript{rd} through December 5\textsuperscript{th}, 2013. Check with your child’s teacher for the specific testing date.
6.8 (calculator may not be used)
The student will evaluate whole number numerical expressions, using order of operations.

- The orders of operations are rules that determine the correct order for solving a sequence of math operations.
- One mnemonic that can be used to help students remember the order of operations is:
  
  **Please Excuse My Dear Aunt Sally**
  - **P**arenthesis
  - **E**xponents
  - **M**ultiplication/Division-whichever comes first going left to right
  - **A**ddition/Subtraction-whichever comes first going left to right

- Go down the list and complete the first operation you see. If you don’t see that operation, move to the next operation on the list.

### Example 1:

\[
2 + (7 \times 2) - 3 + 6^2 \div 4 \times 2
\]

<table>
<thead>
<tr>
<th>Step</th>
<th>Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>2 + 14</td>
</tr>
<tr>
<td>E</td>
<td>2 + 14 - 3 + 6^2 ÷ 4 \times 2</td>
</tr>
<tr>
<td>MD</td>
<td>2 + 14 - 3 + 36 ÷ 4 \times 2</td>
</tr>
<tr>
<td>AS</td>
<td>31</td>
</tr>
</tbody>
</table>

### You try!

\[
2 + (7 \times 2) - 3 + 6^2 \div 4 \times 2
\]

<table>
<thead>
<tr>
<th>Step</th>
<th>Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>2 + 14</td>
</tr>
<tr>
<td>E</td>
<td>2 + 14 - 3 + 6^2 ÷ 4 \times 2</td>
</tr>
<tr>
<td>MD</td>
<td>2 + 14 - 3 + 18</td>
</tr>
<tr>
<td>AS</td>
<td>31</td>
</tr>
</tbody>
</table>

### Example 2:

\[
(44 + 20) \div 2^3 - 7 + 4 \times 5
\]

<table>
<thead>
<tr>
<th>Step</th>
<th>Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>64 ÷ 2^3 \times 7 + 4 \times 5</td>
</tr>
<tr>
<td>E</td>
<td>64 ÷ 8 - 7 + 4 \times 5</td>
</tr>
<tr>
<td>MD</td>
<td>8 - 7 + 20</td>
</tr>
<tr>
<td>AS</td>
<td>21</td>
</tr>
</tbody>
</table>

### You Try!

\[
(44 + 20) \div 2^3 - 7 + 4 \times 5
\]
SOL Practice Items provided by the VDOE, [http://www.doe.virginia.gov/testing/sol/standards_docs/mathematics/index.shtml](http://www.doe.virginia.gov/testing/sol/standards_docs/mathematics/index.shtml)

Answers are located on the last page of the booklet.

Order of Operations, SOL 6.8

1. When simplifying the following, using order of operations, which operation should be performed first?
   \[8 - 4 \div 2 + 3 \cdot 5\]
   - A 8 - 4
   - B 4 ÷ 2
   - C 2 + 3
   - D 3 ÷ 5

2. \[\frac{10 + 30 \div 5}{28 \div 7 \cdot 2}\]
   - A 8
   - B 4
   - C 2
   - D 1

3. What number is equal to \(2 \cdot 8 - 4 \div 4\) ?
   - A 2
   - B 3
   - C 14
   - D 15

4. When simplifying the following, using order of operations, which operation should be performed first?
   \[11 \div (12 - 8 \cdot 3) + 2^4\]
   - F 11 + 12
   - G 12 - 8
   - H 8 \cdot 3
   - J 2^4
SOL 6.10 (calculator may be used)
The student will
a) Define pi (π) as a ratio of the circumference of a circle to its diameter
b) Solve practical problems involving circumference and area of a circle, given the diameter or radius
c) Solve practical problems involving area and perimeter
d) Describe and determine the volume and surface area of a rectangular prism

Circumference and Area of Circles

- A **diameter** is a chord that goes through the center of a circle.

  ![Diameter](image)

  - When using formulas, sometimes you are given the diameter and must find the radius. To do this, divide the given diameter by 2 to find the radius.

  **Example:** If the diameter of a circle is 10 and you need the radius, divide by 2.
  \[
  10 \div 2 = 5 \text{ so, the radius} = 5
  \]

- A **radius** is a segment from the center of a circle to any point on the circle. Two radii end-to-end form a diameter of a circle.

  ![Radius](image)

  When using formulas, sometimes you are given the radius and must find the diameter. To do this, multiply the given radius by 2 to find the diameter.

  **Example:** If the radius of a circle is 6 and you need the diameter, multiply by 2.
  \[
  6 \times 2 = 12 \text{ so, the diameter} = 12
  \]
• The value of pi ($\pi$) is the ratio of the circumference of a circle to its diameter.

• The ratio of the circumference to the diameter of a circle is a constant value, pi ($\pi$), which can be approximated by measuring various sizes of circles.

• The fractional approximation of pi generally used is $\frac{22}{7}$.

• The decimal approximation of pi generally used is 3.14.

• **Circumference** is the distance around or perimeter of a circle.

Formulas:

$$C = \pi d$$

$$C = 2\pi r$$

$$A = \pi r^2$$

($c$ is circumference, $d$ is diameter, $r$ is radius, $A$ is area)

• Finding the **circumference of a circle**: Use the formula $C = \pi d$ or $C = 2\pi r$

**Example:**

If the diameter of a circle is 6.5 inches, which is closest to the circumference of the circle?

**Step 1:** Choose the correct formula and write it down. There are 2 different formulas that can be used for finding the circumference of a circle.

$$C = \pi d \quad \text{OR} \quad C = 2\pi r$$

**Step 2:** Fill in the value of $\pi$.

$$C = 3.14 \times d \quad \text{OR} \quad C = 2 \times 3.14 \times r$$

**Step 3:** Replace the variable with the given value. If the diameter is given, use the formula on the left in the above step. If the radius is given, use the formula on the right in the above step.

$$C = 3.14 \times 6.5 \quad \text{OR} \quad C = 2 \times 3.14 \times 3.25$$

**Step 4:** Complete the calculations.

$$C = \textbf{20.4 inches} \text{ (rounded to the nearest tenth)}$$
• Finding the **area of a circle**: Use the formula $A = \pi r^2$

**Example:** Which is the closest to the area of a circle if the diameter is 9 inches?

**Step 1:** Start by writing the correct formula. Make sure you select the formula for area and **not** circumference.

$$A = \pi r^2$$

**Step 2:** Fill in the value of $\pi$.

$$A = 3.14 \times r^2$$

**Step 3:** Replace the variable with the value of the radius.

If the diameter is given, divide the diameter by 2; this will give you the radius. Remember, the radius is half of the diameter. So in this example, the diameter given is 9. Divide $9 \div 2 = 4.5$.

$$A = 3.14 \times 4.5^2$$

**Step 4:** Calculate the radius squared. This is done by multiplying the radius times the radius. Remember, $r^2 = r \times r$.

$$A = 3.14 \times 4.5 \times 4.5$$

$$A = 3.14 \times 20.25$$

**Step 5:** Complete the calculations. Remember that area is calculated in square units, so include that in your answer.

$$A = 63.585 \text{ inches}^2$$
• The **area** of a polygon is the number of non-overlapping square units required to fill the region enclosed by the curve.

Applications of area include:
- Covering the table with newspaper
- A bucket of paint covers 220 square feet
- Painting the door red
- The glass in the window
- The tarp that covers the baseball field when it is raining
- The tiles on the kitchen floor
- The entire city of Suffolk

• The **perimeter of a polygon** is the measure of the distance around the polygon.

Applications of perimeter include:
- Painting a gold trim around the edge of the coffee table
- A blue border on the carpet
- A fence around the playground
- The border around the bulletin board
- The trim around the window
- The baseboard trim around the room
- The border of the state of Virginia

Area of Triangles

Formulas:

\[
A = \frac{1}{2}bh
\]

(A is area, \(b\) is base, \(h\) is height)

• Finding the area of a triangle: Use the formula \(A = \frac{1}{2}bh\)
Example:

What is the area of the triangle?

\[
A = \frac{1}{2} bh \
\]

\[
A = \frac{1}{2} (10)(6) \
\]

\[
A = \frac{1}{2} (60) \
\]

\[
A = 30 \text{ square meters} \quad \text{OR} \quad A = 30 \text{ meters}^2
\]

Perimeter and Area of Squares and Rectangles

Formulas:

\[
p = 4s \\
A = s^2
\]

\[
p = 2l + 2w \\
A = lw
\]

(s is side of a square, \(p\) is perimeter, \(A\) is area, \(l\) is length, \(w\) is width, \(h\) is height, and \(b\) is base.)
- Finding the **perimeter of a square**: Use the formula \( p = 4s \)

**Example:**
A picture measures 5 inches by 5 inches. How much wood is needed to frame the picture?

\[
p = 4s \\
p = 4(5) \\
p = 20 	ext{ inches}
\]

- Finding the **perimeter of a rectangle**: Use the formula \( p = 2l + 2w \)

**Example:**
A picture measures 8 inches by 10 inches. How much wood is needed to frame the picture?

\[
p = 2l + 2w \\
p = 2(8) + 2(10) \\
p = 16 + 20 \\
p = 36 	ext{ inches}
\]

- Finding the **area of a square**: Use the formula \( A = s^2 \)

**Example:**
A picture measures 4 inches by 4 inches. How much wood is needed to frame the picture?

\[
A = s^2 \\
A = 4^2 \\
A = 16 	ext{ inches}
\]

- Finding the **area of a rectangle**: Use the formula \( A = l \times w \)

**Example:**
A table measures 3 feet by 6 feet. How much paper is needed to cover the table?

\[
A = l \times w \\
A = 3 \times 6 \\
A = 18 \text{ square feet or } 18 \text{ feet}^2
\]
Formulas: Volume and Surface Area of Prisms

(V is volume, S.A. is surface area, l is length, w is width, h is height.)

- The surface area of a rectangular prism is the sum of the areas of all six faces.
- Finding the surface area of a rectangular prism:
  Use the formula $SA = 2lw + 2lh + 2wh$

**Example:** Carl is covering a rectangular prism-shaped box with cloth.

What is the minimum amount of cloth Carl needs to cover the entire box?

$SA = 2lw + 2lh + 2wh$

$SA = 2(8)(12) + 2(8)(2) + 2(12)(2)$

$SA = 2(96) + 2(16) + 2(24)$

$SA = 192 + 32 + 48$

$SA = 272$ inches$^2$
• The **volume of a rectangular prism** is the measure of the amount of space that it occupies. Volume is measured in cubic units.

• Finding **volume of a rectangular prism**: Use the formula $V = lwh$

**Example:** Joseph is filling a box with peanuts.

![Diagram of a rectangular prism with dimensions 25 cm, 20 cm, and 10 cm]

If the box is empty, what is closest to the amount of peanuts the box will hold?

\[
V = lwh
\]

\[
V = (25)(10)(20)
\]

\[
V = (250)(20)
\]

\[
V = 5,000 \text{ cm}^3
\]
**SOL Practice Items provided by the VDOE,**
http://www.doe.virginia.gov/testing/sol/standards_docs/mathematics/index.shtml

**Answers are located on the last page of the booklet.**

**Area & Circumference, SOL 6.10**

1. Logan needs to order a cover for his swimming pool. The circular swimming pool has a radius of 17 feet.

Which is closest to the number of square feet needed to completely cover the pool?
- A 106.76
- B 289
- C 907.46
- D 1,156

2. In the circle shown, Point T is the center of the circle and Point R is on the circle.

Which is closest to the circumference of circle T?
- A 15.70 cm
- B 22.27 cm
- C 31.40 cm
- D 34.54 cm

3. Lou is making a pizza that has a radius of 9 inches. Which is closest to the area of the pizza?
- F 1,017.36 sq in.
- G 254.34 sq in.
- H 56.52 sq in.
- J 25.43 sq in.

4. Which is closest to the circumference of circle O shown?

- F 113.04 cm
- G 75.36 cm
- H 37.68 cm
- J 18.84 cm

5. Point M is the center of the circle shown. Point N lies on circle M.

Which is closest to the area of the circle?
- F 60 cm²
- G 117 cm²
- H 1,386 cm²
- J 5,594 cm²

6. If the diameter of a circle is 7 inches, which is closest to the circumference?
- F 21.98 in.
- G 38.47 in.
- H 43.96 in.
- J 153.86 in.

7. The diameter of a circle is 6 feet. Which is closest to the circumference of the circle?
- A 18.84 ft
- B 28.26 ft
- C 37.68 ft
- D 113.04 ft

8. A wheel has a radius of 67.5 meters. Which is closest to the circumference of this wheel?
- A 211.95 m
- B 423.9 m
- C 4,556.25 m
- D 14,306.62 m

9. The diameter of the circular base of a storage container is 18.8 meters. The circumference of the base is approximately 59 meters. Which of these could be used to estimate the value of \( \pi \)?
- A \( \frac{9.4}{59} \)
- B \( \frac{59}{9.4} \)
- C \( \frac{18.8}{59} \)
- D \( \frac{59}{18.8} \)

10. The circular campfire site at Camp Willow has a diameter of 5 yards. Which is closest to the area of this campfire site?
- A 15.7 sq yd
- B 19.6 sq yd
- C 31.4 sq yd
- D 78.5 sq yd
SOL Practice Items provided by the VDOE, [http://www.doe.virginia.gov/testing/sol/standards_docs/mathematics/index.shtml](http://www.doe.virginia.gov/testing/sol/standards_docs/mathematics/index.shtml)

Answers are located on the last page of the booklet.

Area & Perimeter of Polygons, SOL 6.10

1. What is the area of the triangle shown?

   ![Triangle Diagram]

   A. 32 cm²  
   B. 40 cm²  
   C. 48 cm²  
   D. 96 cm²

2. Andrea is buying a rectangular rug that is 3 feet wide and 4 feet long. What is the total area that the rug will cover?

   F. 12 square feet  
   G. 14 square feet  
   H. 24 square feet  
   J. 28 square feet

3. Susan has a rectangular garden that measures 20 feet by 10 feet. What is the least amount of fencing that she needs to buy in order to enclose the garden?

   A. 30 feet  
   B. 60 feet  
   C. 80 feet  
   D. 200 feet

4. Casey and her friends went to the library to work on their social studies project. They pushed the two tables pictured together.

   ![Table Diagram]

   What will be the total area of the top of the two tables when they are pushed together?

   F. 18 square feet  
   G. 24 square feet  
   H. 36 square feet  
   J. 48 square feet

5. Rory and Curtis are on the stage crew for the school play. The rectangular stage measures 20 feet by 40 feet. What is the minimum amount of tape they will need to outline the stage?

   A. 60 feet  
   B. 120 feet  
   C. 400 feet  
   D. 800 feet

6. What is the area of the large rectangle shown if each small square is 4 inches wide and 4 inches long?

   ![Rectangle Diagram]

   A. 480 sq in.  
   B. 120 sq in.  
   C. 80 sq in.  
   D. 30 sq in.

7. Mr. Miller is putting a border around the edges of a rectangular ceiling. The perimeter of the ceiling is 18 meters. Identify the measurements that could be the two dimensions of the ceiling.

   ![Rectangular Ceiling Diagram]

<table>
<thead>
<tr>
<th>2 meters</th>
<th>3 meters</th>
<th>4 meters</th>
<th>5 meters</th>
<th>8 meters</th>
<th>9 meters</th>
</tr>
</thead>
</table>

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SOL Practice Items provided by the VDOE, http://www.doe.virginia.gov/testing/sol/standards_docs/mathematics/index.shtml

Answers are located on the last page of the booklet.

Volume and Surface Area, SOL 6.10

1. Chelsea wants to cover a rectangular prism-shaped box with paper. Which is closest to the minimum amount of paper Chelsea needs?

F 26 cm²
G 54 cm²
H 72 cm²
J 108 cm²

2. Carl is covering the rectangular prism-shaped box with cloth.

What is the minimum amount of cloth Carl needs to cover the entire box?
A 96 sq in.
B 136 sq in.
C 192 sq in.
D 272 sq in.

3. This diagram shows a rectangular prism.

What is the total surface area of this prism?
F 110 square inches
G 168 square inches
H 208 square inches
J 220 square inches

4. What is the surface area of a rectangular prism with the dimensions shown?

A 7 sq in.
B 14 sq in.
C 18 sq in.
D 25 sq in.

5. The measurements of a rectangular prism are shown.

What is the total surface area of this prism?

A 39 square inches
B 45 square inches
C 66 square inches
D 78 square inches
SOL 6.18 (calculator may be used)
The students will solve one-step linear equations in one variable involving whole number coefficients and positive rational solutions.

- A **one-step linear equation** is an equation that requires one operation to solve.
- An **equation** is a mathematical sentence stating that two expressions are equal. Equations have an equal sign.

Below is an example of an equation:

\[ 4 + x = 10 \]

- A **variable** is a symbol (placeholder) used to represent an unspecified member of a set.  
  \( x \) is the variable in the above equation.

- A **term** is a number, variable, product, or quotient in an expression of sums and/or differences. In \( 7x^2 + 5x - 3 \), there are three terms, \( 7x^2 \), \( 5x \), and \( 3 \).

- A **coefficient** is the numerical factor in a term. For example, in the term \( 3xy^2 \), \( 3 \) is the coefficient.

- An **expression** is a mathematical phase that can contain ordinary numbers, variables and operators (add subtraction, multiplication or division). Expression do not have equal signs

Look at the expression below.

\[ 4x + 7y - 9 \]

**What is the coefficient of** \( x \)?  
**Answer:** \( 4 \)  
**What is the coefficient of** \( y \)?  
**Answer:** \( 7 \)  
**How many terms are in the expression?**  
**Answer:** \( 3 \)  
**What are the variables in this expression?**  
**Answer:** \( x \) and \( y \)
Models are often used to teach beginning concepts in algebra. Students are taught to write an equation based on a model.

**Example:**

![Image](300x453 to 330x481)

![Image](303x91 to 337x125)

Use the representations above to answer the following question.

The scale is balanced. Write a number sentence that best represents it.

**Step 1:** A balance scale represents an equation because both sides of the scale and both sides of an equation must be equivalent.

**Step 2:** The key at the top of the question indicates that one “donut” represents one \( w \) in the equation. Looking at the left side of the scale, notice that there are 6 “donuts” or \( 6w \) on the left side of the scale. So, write the left side of the equation.

\[ 6w = ? \]

**Step 3:** The key at the top of the question also indicates that one “bar” represents one in the equation. Looking at the right side, notice that there are 18 “bars” or 18 on the right side of the scale. Include that number on the right side of the equation.

\[ 6w = 18 \]
Students are also given an equation and asked to model it using manipulatives.

**Example:**

![Diagram of a balance scale with a donut and a bar]

Using the representations above, draw a model that best represents the following:

\[ x + 3 = 8 \]

**Step 1:** A balance scale represents an equation because both sides of the scale and both sides of an equation must be equivalent.

**Step 2:** The key at the top of the question indicates that one “donut” represents one \( x \) in the equation. Looking at the left side of the equation, the first term is \( x \). Draw a “donut” on the left side of the balance scale to represent \( x \). Remember that there is only one \( x \) so draw only one “donut”.

![Step 2 Diagram]

**Step 3:** Notice that on the left side of the equation, 3 is added to \( x \). The \( x \) was modeled in the previous step so now add 3 to the left side of the balance scale. The key at the top of the question indicates that one “bar” represents one in the equation. So, place 3 “bars” next to the “donut”.

![Step 3 Diagram]

**Step 4:** Now, look back at the equation. The value of the right side of the equation is 8. To represent this, draw 8 “bars” on the right side of the balance scale. The equation and the balance scale model are equivalent.

![Step 4 Diagram]
• To **solve an equation** you find the value that makes the number sentence true. To maintain equality, an operation performed on one side of an equation must be performed on the other side.

**Example 1:**

\[
x + 7 = 20
\]

\[
-7 = -7
\]

\[
x = 13
\]

Your objective is to get the variable \( x \) by itself. In order to accomplish this you perform the inverse operation, you subtract 7 from both sides of the equation. Now add down, you are left with the solution \( x = 13 \).

**Example 2:**

\[
z - 5 = 12
\]

\[
+5 = +5
\]

\[
z = 18
\]

Your objective is to get the variable \( z \) by itself. In order to accomplish this you perform the inverse operation, you add 5 to both sides of the equation. Now add down, you are left with the solution \( z = 18 \).

**Example 3:**

\[
3s = 21
\]

\[
3 \quad 3
\]

\[
s = 7
\]

Your objective is to get the variable \( s \) by itself. In order to accomplish this you perform the inverse operation, you divide both sides of the equation by 3. Now divide, you are left with the solution \( s = 7 \).

**Example 4:**

\[
3 \times d = 6 \times 3
\]

\[
3
\]

\[
d = 18
\]

Your objective is to get the variable \( d \) by itself. In order to accomplish this you perform the inverse operation, you multiply both sides of the equation by 3. To maintain equality, an operation performed on one side of an equation must be performed on the other side. Now multiply, you are left with the solution \( d = 18 \).
**SOL Practice Items provided by the VDOE,**
http://www.doe.virginia.gov/testing/sol/standards_docs/mathematics/index.shtml

*Answers are located on the last page of the booklet.*

**One Step equations and Algebraic Vocabulary, SOL 6.18**

1. The scale below is balanced.

![Image](image1.png)

Using the above representations, which could be placed on the right side of the following scale to make it balanced?

A

B

C

D

2. Solve for \( m \):

\[ 2m = 42 \]

F \( m = 21 \)

G \( m = 40 \)

H \( m = 44 \)

J \( m = 84 \)

3. Which word best describes the following?

\[ h = 6 = 14 \]

A Equation

B Term

C Coefficient

D Variable

4. What is the coefficient in the number sentence \( 8x = 16 \)?

A \( x \)

B 8

C \( 8x \)

D 16

5. John found the solution of \( 14 + n = 84 \) in one step by —

F adding 14 to both sides of the number sentence

G dividing both sides of the number sentence by 14

H multiplying both sides of the number sentence by 14

J subtracting 14 from both sides of the number sentence

6. Look at the equation mat.

![Image](image2.png)

What is the value of \( x \)?

F 1

G 2

H 4

J 6

7. Using the representations above, which correctly represents the following number sentence if each scale is balanced?

\[ 5 + x = 7 \]

A

B

C

D

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8 Look at the equation mat.

What is the value of x?

F 11
G 7
H 3
J 2

9 What value of p will make the following number sentence true?

14p = 182

A 13
B 168
C 196
D 2,548

10 The scale below is balanced.

Using the representations and scale above, which could be placed on the right side of the following scale to make it balanced?

A
B
C
D

11 Which is an equation?

F h – 5 = 32
G 5x -3
H 5y + 1 > 4
J 4t²

12 A variable is –

F the numerical factor in a term
G a mathematical sentence stating that two expressions are equal
H a symbol used to represent an unspecified member of a set
J a number in an expression of sums and/or differences

13 Which is an equation?

F 52 = 0.5 + x
G 5x + 7
H (48 – 6x) + 13
J \( \frac{1}{2}x + 7 \)

14 What value of z makes the number sentence shown true?

z + 53 = 92

A 4,876
B 145
C 49
D 39

15 Which best describes the circled part of the following?

2(5) + 5 = 9

A Variable
B Coefficient
C Term
D Equation

16 Miss Jackson wrote this number sentence on the board.

Which procedure could be used to find a value for x that will make the number sentence true?

F Subtract 7 from 7x, and subtract 7 from 36.
G Multiply 7x by 7, and multiply 36 by 7.
H Divide 7x by 7, and divide 36 by 7.
J Add 7 to 7x, and add 7 to 36.
17 The drawing below is a scale that is balanced. Each △ represents an x, and each ○ represents a 1.

Which best represents the drawing?
A 3 + x = 21
B 3 + x > 21
C 3x > 21
D 3x = 21

18 The scale below is balanced.

Using the representations and scale above, which could be placed on the right side of the following scale to make it balanced?

F
G
H
J

19 Which represents the variable in the following number sentence?

\[ 3 + v = 45 \]

F 3
G ν
H =
J 45

20 Which method could be used to solve the number sentence shown?

\[ 4x = 16 \]

F Subtract 4 from 4x, and subtract 4 from 16
G Subtract 4 from 4x, and subtract 16 from 16
H Divide 4x by 4, and divide 16 by 16
J Divide 4x by 4, and divide 16 by 4

21 ⭐ represents w
☐ represents 1

Use the representations above to answer the question.

If the scale is balanced, which number sentence does it best represent?

F 5w = 30
G w + 5 = 30
H 5 - w = 30
J w ÷ 5 = 30

22 What value of y makes the number sentence shown true?

\[ y - 3 = 15 \]

A 5
B 12
C 18
D 45

23 Which is an equation?

F x + 6
G 5 > 7
H x
J \[ x + \frac{1}{2} = 9 \]
24. \( \square \) represents \( r \)  
\( \square \) represents \( 1 \)

Using the representations above, which model best represents the following?

\[ r + 2 = 18 \]

26. Which word describes the boxed number?

\[ B \quad x = y \]

- F Term
- G Variable
- H Equation
- J Coefficient

27. Based on the equation mat, what is the value for \( x \)?

\[ \square \quad = \quad \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \]

Key: \( \square = x \), \( \bigcirc = 1 \)

A 2  
B 6  
C 22  
D 112

28. What is the solution to the following?

\[ \frac{n}{6} = 36 \]

- F \( n = 6 \)
- G \( n = 30 \)
- H \( n = 42 \)
- J \( n = 216 \)

29. What number sentence is modeled by the shapes shown?

\[ \square \square \square = \square \square \square \square \square \]

Key: \( \square = x \), \( \square = 1 \)

A \( x + 4 = 12 \)  
B \( 4x = 12 \)  
C \( 4x = 3 \)  
D \( x = 9 \)

---

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30. Which of these is the variable in the number sentence $4x + 3 = 8$?
- F $4$
- G $3$
- H $+$
- J $x$

31. What is the value of $m$ when $18 = \frac{m}{6}$?
- A $\frac{1}{3}$
- B $3$
- C $12$
- D $108$
Testing Information

2nd Nine Weeks Test

The 2nd Nine Weeks Test will include questions for all standards taught since the beginning of the school year. Use both the 1st and 2nd Nine Weeks Review Notes for Parents and Students to help prepare for the test.

The 2nd Nine Weeks Test will be administered the week of January 16th, 2013. Check with your child’s teacher for the specific date.

The following pages contain links to video clips, vocabulary lists, and activities that can be used to review math information that is relevant for this grading period.
Math Smarts!
Math + Smart Phone = Math Smarts!

Need help with your homework? Wish that your teacher could explain the math concept to you one more time? This resource is for you! Use your smart phone and scan the QR code and instantly watch a 3 to 5 minute video clip to get that extra help. (These videos can also be viewed without the use of a smart phone. Click on the links included in this document.)

**Directions:** Using your Android-based phone/tablet or iPhone/iPad, download any QR barcode scanner. How do I do that?
1. Open Google Play (for Android devices) or iTunes (for Apple devices).
2. Search for “QR Scanner.”
3. Download the app.

After downloading, use the app to scan the QR code associated with the topic you need help with. You will be directed to a short video related to that specific topic!

*It’s mobile math help when you need it! So next time you hear, “You’re always on that phone” or “Put that phone away!” you can say “It’s homework!!!”*

Access this document electronically on the STAR website through Suffolk Public Schools. ([http://star.spsk12.net/math/MSInstructionalVideosQRCodes.pdf](http://star.spsk12.net/math/MSInstructionalVideosQRCodes.pdf))

**PLEASE READ THE FOLLOWING:**
This resource is provided as a refresher for lessons learned in class. Each link will connect to a YouTube or TeacherTube video related to the specific skill noted under “Concept.” Please be aware that advertisements may exist at the beginning of each video.
<table>
<thead>
<tr>
<th>SOL</th>
<th>Concept</th>
<th>Link</th>
<th>QR Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.5</td>
<td>Describing positive exponents and perfect squares</td>
<td><a href="https://www.youtube.com/watch?v=FNY2TylIzXQ&amp;list=PL0573514AC020D58D">https://www.youtube.com/watch?v=FNY2TylIzXQ&amp;list=PL0573514AC020D58D</a></td>
<td><img src="https://via.placeholder.com/150" alt="QR Code" /></td>
</tr>
<tr>
<td>6.7</td>
<td>Solving multi-step practical problems involving decimals</td>
<td>COMING SOON!</td>
<td><img src="https://via.placeholder.com/150" alt="QR Code" /></td>
</tr>
<tr>
<td>6.8</td>
<td>Evaluating whole number expressions using the order of operations</td>
<td><a href="https://www.youtube.com/watch?v=oo5DAHo7NHY">https://www.youtube.com/watch?v=oo5DAHo7NHY</a></td>
<td><img src="https://via.placeholder.com/150" alt="QR Code" /></td>
</tr>
<tr>
<td>6.10</td>
<td>Calculating the area of a circle given the diameter</td>
<td><a href="http://www.virtualnerd.com/middle-math/geometry-measurement/circle-circumference-area/circle-area-from-diameter">http://www.virtualnerd.com/middle-math/geometry-measurement/circle-circumference-area/circle-area-from-diameter</a></td>
<td><img src="https://via.placeholder.com/150" alt="QR Code" /></td>
</tr>
<tr>
<td>SOL</td>
<td>Concept</td>
<td>Link</td>
<td>QR Code</td>
</tr>
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</tr>
<tr>
<td>6.10</td>
<td>Calculating the circumference of a circle given the radius</td>
<td><a href="http://www.virtualnerd.com/middle-math/geometry-measurement/circle-circumference-area/circle-circumference-from-radius">http://www.virtualnerd.com/middle-math/geometry-measurement/circle-circumference-area/circle-circumference-from-radius</a></td>
<td><img src="image1.png" alt="QR Code" /></td>
</tr>
<tr>
<td>6.10</td>
<td>Solving practical problems involving area and perimeter</td>
<td><a href="http://www.youtube.com/watch?v=1cuN8e-y-fI">http://www.youtube.com/watch?v=1cuN8e-y-fI</a></td>
<td><img src="image2.png" alt="QR Code" /></td>
</tr>
<tr>
<td>6.17</td>
<td>Identifying the common difference of a arithmetic sequence (up to 4:56)</td>
<td><a href="https://share.ehs.uen.org/node/27699">https://share.ehs.uen.org/node/27699</a></td>
<td><img src="image6.png" alt="QR Code" /></td>
</tr>
<tr>
<td>SOL</td>
<td>Concept</td>
<td>Link</td>
<td>QR Code</td>
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</tr>
<tr>
<td>6.17</td>
<td>Identifying the common difference of a geometric sequence (up to 6:40)</td>
<td><a href="https://share.ehs.uen.org/node/27702">https://share.ehs.uen.org/node/27702</a></td>
<td><img src="Image" alt="QR Code" /></td>
</tr>
<tr>
<td>6.18</td>
<td>Solving one-step equations</td>
<td><a href="http://www.youtube.com/watch?v=8GZooSmFop4">http://www.youtube.com/watch?v=8GZooSmFop4</a></td>
<td><img src="Image" alt="QR Code" /></td>
</tr>
<tr>
<td>6.18</td>
<td>Representing one-step equations using manipulatives: balance scale</td>
<td>COMING SOON!</td>
<td><img src="Image" alt="QR Code" /></td>
</tr>
<tr>
<td><strong>exponent</strong></td>
<td>The number that tells how many times the base is used as a factor.</td>
<td></td>
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<tr>
<td>--------------</td>
<td>---------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>exponential notation</strong></td>
<td>Numbers written as exponents; the base is the number that is multiplied, and the exponent represents the number of times the base is used as a factor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>power</strong></td>
<td>Written as a superscript number, it symbolizes how many times the base number must be multiplied to find the numerical value of the exponent.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>base</strong></td>
<td>The factor that will be multiplied in an exponent. The power tells how many times the base will be multiplied to find the numerical value of the exponent.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>power of ten</strong></td>
<td>An exponent composed of the number ten (10) raised to a power. The power tells how many zeroes will be in the standard form of the exponent. For example, $10^3$ will have three zeroes in the answer, making it 1,000. If $10^3$ were written as a product of its factors, it would read $10 \times 10 \times 10 = 1,000$.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>square root</strong></td>
<td>A number which, when multiplied by itself, produces the given number (e.g., the square root of 49 is 7 since $7 \times 7 = 49$).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### SOL 6.5 (continued)

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>squared</td>
<td>A number multiplied by itself; symbolized by a superscript 2 written above and to the right of a number. For example, $5^2$ would be solved by multiplying $5 \times 5 = 25$.</td>
</tr>
<tr>
<td>perfect square</td>
<td>The number that results from multiplying any whole number by itself (e.g. $36 = 6 \times 6$).</td>
</tr>
<tr>
<td>cubed</td>
<td>The product in which a number is a factor three times; 2 cubed is 8 because $2 \times 2 \times 2 = 8$.</td>
</tr>
<tr>
<td><strong>SOL 6.17</strong></td>
<td></td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td><strong>geometric pattern</strong></td>
<td>A sequence that is composed of shapes, figures, and diagrams. Geometric patterns may involve shape, size, angles, transformations of shapes, and growth.</td>
</tr>
<tr>
<td><strong>arithmetic sequence</strong></td>
<td>A set of numbers that occurs in a specific pattern</td>
</tr>
<tr>
<td><strong>triangular number</strong></td>
<td>A number that can be represented geometrically as a certain number of dots arranged in a triangle, with one dot in the first (top) row and each succeeding lower row having one more dot than the row above it. To find the next triangular number, a new row is added to an existing triangle, and total number of dots counted.</td>
</tr>
<tr>
<td><strong>square number</strong></td>
<td>A number that can be represented geometrically as the number of dots in a square array. Square numbers are perfect squares and are the numbers that result from multiplying any whole number by itself (e.g., $36 = 6 \times 6$).</td>
</tr>
<tr>
<td><strong>powers of 10</strong></td>
<td>1, 10, 100, 1,000, 10,000</td>
</tr>
<tr>
<td><strong>consecutive</strong></td>
<td>Following one after the other in order.</td>
</tr>
<tr>
<td>-----------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td><strong>common ratio</strong></td>
<td>The ratio used to determine what each number is multiplied by in order to obtain the next number in the geometric sequence</td>
</tr>
<tr>
<td><strong>common difference</strong></td>
<td>The difference between each succeeding number in order to determine what is added to each previous number to obtain the next number</td>
</tr>
<tr>
<td><strong>SOL 6.8</strong></td>
<td></td>
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<tr>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td><strong>expression</strong></td>
<td>A mathematical phrase that contains operations, numbers, and/or variables.</td>
</tr>
<tr>
<td><strong>operation</strong></td>
<td>The math processes used to solve an expression. ((+, -, \times, \div))</td>
</tr>
<tr>
<td><strong>order of operations</strong></td>
<td>The rules to follow when more than one operation is used in a numerical expression.</td>
</tr>
<tr>
<td><strong>PEMDAS</strong></td>
<td>Mnemonic used when solving an expression. (\text{(please excuse my dear aunt sally)})</td>
</tr>
<tr>
<td><strong>polyon</strong></td>
<td>A closed, two-dimensional figure formed by three or more straight sides</td>
</tr>
<tr>
<td>-----------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>area</strong></td>
<td>The number of square units needed to cover the surface of a two dimensional figure</td>
</tr>
<tr>
<td><strong>perimeter</strong></td>
<td>The measure of the distance around a polygon</td>
</tr>
<tr>
<td><strong>length</strong>(l)</td>
<td>The measurement of the extent of an object or shape along its greatest dimension</td>
</tr>
<tr>
<td><strong>width</strong>(w)</td>
<td>The measurement of the extent of an object or shape along its shortest dimension</td>
</tr>
<tr>
<td><strong>base</strong>(b)</td>
<td>The top and bottom faces of a three dimensional object</td>
</tr>
<tr>
<td><strong>height</strong>(h)</td>
<td>The shortest distance from the base of a parallelogram to its opposite side; in a triangle, the distance from the base to the opposite vertex</td>
</tr>
<tr>
<td><strong>approximation</strong></td>
<td>An inexact result adequate for a given purpose</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td><strong>ratio</strong></td>
<td>A comparison of two numbers by division. Example: The ratio 2 to 3 can be expressed as 2 out of 3, 2:3, or 2/3.</td>
</tr>
<tr>
<td><strong>circumference</strong></td>
<td>The distance around the outside of a circle</td>
</tr>
<tr>
<td><strong>pi</strong></td>
<td>The ratio of the circumference of a circle to the diameter of a circle; equal to the fraction 22/7; often written as the approximation 3.14</td>
</tr>
<tr>
<td><strong>radius</strong></td>
<td>The distance from the center of the circle to any point on the circle</td>
</tr>
<tr>
<td><strong>diameter</strong></td>
<td>The distance across a circle through the center</td>
</tr>
<tr>
<td><strong>net</strong></td>
<td>An arrangement of two-dimensional figures that can be folded to form a polyhedron</td>
</tr>
<tr>
<td><strong>rectangular prism</strong></td>
<td>A solid figure that has two parallel and congruent bases that are rectangles</td>
</tr>
<tr>
<td><strong>volume</strong></td>
<td>The number of cubic units needed to fill the space occupied by a solid</td>
</tr>
<tr>
<td><strong>surface area</strong></td>
<td>The sum of the areas of all the surfaces (faces) of a three-dimensional figure</td>
</tr>
</tbody>
</table>
| **one-step linear equation** | An equation that requires one operation to solve  
5 + x = 10 or 4z = 12 |
|-----------------------------|-----------------------------------------------------------------|
| **expression**              | A variable or a combination of variables, numbers, and/or operation symbols  
4 + 3 – 2 or 3x^3 + 2 |
| **equation**                | Mathematical sentence stating that two expressions are equal  
4 + 3 = 7 or a(b) = c |
| **variable**                | A symbol (placeholder) used to represent an unspecified number of a set  
4x – 5, x is a variable |
| **term**                    | A number, variable, product, or quotient in an expression of sums and/or differences  
2x^2 + 3, there are 2 terms (2x^2 and 3) |
| **coefficient**             | The numerical factor in a term  
3y^2, 3 is a coefficient |
Released Test Answers
(2nd Nine Weeks)

SOL 6.7 (Decimal Computation)
1. F
2. J
3. C
4. D
5. B
6. G
7. H
8. G
9. B
10. A
11. 2.5 Liters

SOL 6.5 Exponents and Perfect Squares)
1. D
2. H
3. C
4. C
5. D
6. C
7. H
8. G
9. C
10. D

SOL 6.17 (Numerical and Geometric Patterns)
1. C
2. H
3. D
4. D
5. J
6. D
7. F
8. F
9. F
10. D
11. D

SOL 6.8 (Order of Operations)
1. B
2. C
3. D
4. H
5. B
6. 128

SOL 6.10 (Area and Circumference of Circles)
1. C
2. D
3. G
4. J
5. H
6. F
7. A
8. B
9. D
10. B

SOL 6.10 (Volume and Surface Area of Prisms)
1. J
2. D
3. J
4. D
5. D

SOL 6.18 (One-Step Equations & Vocabulary)
1. D
2. F
3. A
4. B
5. J
6. H
7. A
8. H
9. A
10. B
11. F
12. H
13. F
14. D
15. A
16. H
17. D
18. G
19. G
20. J
21. F
22. C
23. J
24. G
25. B
26. J
27. B
28. J
29. B
30. J
31. D

Julie A. Byrd, Suffolk Public Schools Updated 10/13