May 2013

Dear Parents/Guardians,

Research studies have shown that during an extended summer vacation, children can lose an average of 2.6 months worth of knowledge. (http://learningexpressblog.typepad.com/blog/2010/06/summerbridge.html)

Your child’s teacher has put together this packet of math practice to be completed over the summer vacation. We hope that with your help and motivation, your student will work on this packet a little each week over the long vacation.

As a reward, students that correctly complete and return the packet by Friday, August 30th, 2013, will be given a special treat!

Good luck and have a wonderful summer vacation!

Thank you,
Darien District 61 Teachers
The following Reference Sheet may be helpful.

ISAT MATHEMATICS REFERENCE SHEET
Grades 7 and 8

FORMULAS FOR PLANE FIGURES

Parallelogram: \( A = bh \)

Trapezoid: \( A = \frac{1}{2} (b_1 + b_2)h \)

Triangle: \( A = \frac{1}{2} bh \)

Circle: \( C = 2\pi r \)
\( A = \pi r^2 \)

Right Triangle:
\[ c^2 = a^2 + b^2 \]

FORMULAS FOR SOLID FIGURES

Prism: \( V = Bh \) \((B \text{ is the area of the base.})\)

Right Cylinder: \( V = \pi r^2 h \)

Regular Pyramid: \( V = \frac{1}{3} Bh \)
Write each number in scientific notation.

1.) 45,000,000

2.) 0.000014

Write each number in standard form.

3.) 2.9 \cdot 10^6

4.) 7.86 \cdot 10^{-2}

Simplify each expression. (NO CALCULATOR!)

5.) -2 + (-13) = __________

6.) 12 + (-45) = __________

7.) 17 - (-14) = __________

8.) -14 - 17 = __________

9.) -14 + 14 = __________

10.) 16(-4) = __________

11.) -15(-9) = __________

12.) 75 ÷ (-3) = __________

13.) -256/-16 = __________

14.) 14 ÷ (-2) + 6 = __________

15.) -25 ÷ (-5) \cdot 2 = __________

16.) 28 ÷7(5) = __________

17.) 35 ÷ 5 + 56 ÷ 7 = __________

18.) 10 - (3 + 5) = __________

19.) 3 \cdot 4(5 - 3.8) + 2.7 = __________
Solve & Check each equation. Box your answer. SHOW ALL OF YOUR WORK! (NO CALCULATOR!)

20.) \(-7y + 3 = -25\)  

21.) \(4 = 4 + 7y\)

Check:

Check:

22.) \(6r + 1 = -17\)  

23.) \(\frac{n}{4} + 5 = -1\)

Check:

Check:

Translate into an equation and solve. (NO CALCULATOR!)

24.) Three more than the product of a number and 4 is 15. Find the number.

Equation: ___________________  Solution: ___________________

Show work here:
25.) Emily has saved $74 toward a new sound system that costs $149. She plans on saving an additional $15 each week. How many weeks will it take Emily to save enough money to buy the sound system? Write an equation and then solve it.

Equation: ___________________________ Solution: ___________________________

Show work here:

Write each ratio as a fraction in simplest form. (NO CALCULATOR!)

26.) 12 feet: 10 yards 27.) 75 seconds: 2 minutes

_________________________  __________________________

Find the unit rate. Round to the nearest hundredth if necessary. Include labels with your answers. Show all of your work. (CALCULATOR ALLOWED)

28.) 18 people in 3 vans 29.) 2500 Calories in 24 hours

_________________________  __________________________

Choose the best unit price. Show all of your work! (CALCULATOR ALLOWED)

30.) $12.95 for 3 pounds of candy or $21.45 for 5 pounds of candy

ANSWER: ___________________________
Find the actual distance between each pair of cities. Round to the nearest tenth if necessary. Show all work. (CALCULATOR ALLOWED)

<table>
<thead>
<tr>
<th>Problem #</th>
<th>Cities</th>
<th>Map Distance</th>
<th>Scale</th>
<th>Actual Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>31.)</td>
<td>Kokomo, IN and Chicago, IL</td>
<td>8 cm</td>
<td>1 cm = 25 km</td>
<td></td>
</tr>
</tbody>
</table>

Work Space for #31:

32.) The scale is 2 inches: 4 feet, find the scale factor.

Complete the table. (CALCULATOR ALLOWED)

<table>
<thead>
<tr>
<th>Problem #</th>
<th>Fraction in simplest form</th>
<th>Decimal</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>33.)</td>
<td></td>
<td></td>
<td>12.5%</td>
</tr>
<tr>
<td>34.)</td>
<td></td>
<td></td>
<td>8 1/4%</td>
</tr>
<tr>
<td>35.)</td>
<td></td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td>36.)</td>
<td>5/8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Find each number. Round to the nearest tenth if necessary.

(CALCULATOR ALLOWED)

37.) 45 is 150% of what number?  

38.) What percent of 60 is 15?

39.) What is the total cost of a sweatshirt if the regular price is $42 and the sales tax is \( \frac{1}{2} \) %?

40.) Aubrey wants to buy a new coat that has a regular price of $185. This weekend, the coat is on sale at a 33% discount. What is the sale price of the coat?

41.) A sports watch with an original price of $86 is on sale for $60.20. What is the percent of discount?
42.) Suppose your restaurant bill comes to $28.35. Find your total cost if the tax is 6.25% and you leave a 20% tip on the amount before tax.

**ANSWER:**

Find the percent of change. Round to the nearest whole percent and state whether the percent of change is an *increase* or *decrease*. (CALCULATOR ALLOWED)

43.) original: 4  
   new: 6

Find the simple interest for each principal, rate, and time. Round to the hundredths place. (CALCULATOR ALLOWED)

44.) $500 invested at $6\frac{1}{4}$% for 5 years  
45.) $769 borrowed at 5% for 13 months
46.) Joey opened a saving account that pays 6.5% simple interest. How much money will be in Joey's account after 3 years if he deposited $250 at the beginning and never made any deposits or withdraws?

**ANSWER:**

47.) Joe has $1,800 from his summer job to invest. If Joe wants to have $2,340 altogether and invests the money at 5% simple interest, in how many years will he have $2,340?

**ANSWER:**

Solve the following proportions. **SHOW ALL OF YOUR WORK!** (CALCULATOR ALLOWED)

48.) \( \frac{3}{d} = \frac{12}{20} \)

49.) \( \frac{7}{8} = \frac{m}{48} \)

**Answer:**

50.) A train travels 146 miles in 2 hours, at this rate how many miles will it travel in 3.5 hours?

**ANSWER:**
51.) An architect built a model of a 220-foot building that he is designing. The model is 25 inches tall and 10 inches wide, how wide is the actual building?

ANSWER: ____________________________________________

Find the area of the following shapes. Include appropriate units and round your answer to the nearest tenth if necessary. SHOW ALL OF YOUR WORK! (CALCULATOR ALLOWED)

52.) A parallelogram with base $= \frac{4.2}{5}$ feet and height = 5 feet. __________________________

53.) trapezoid with bases: 7 yd and 8 yd height: 8.5 yd

54.) __________________________

_________________________
Find the area of the following shapes. Include appropriate units and round your answer to the nearest tenth if necessary. SHOW ALL OF YOUR WORK! (CALCULATOR ALLOWED)

55.)

\[ \text{Area} = \frac{1}{2} \times \text{base} \times \text{height} = \frac{1}{2} \times 9 \text{ in.} \times 3 \text{ in.} = 13.5 \text{ in}^2 \]

56.)

\[ \text{Area} = \text{Area of rectangle} + \text{Area of triangle} = 20 \text{ yd} \times 4 \text{ yd} + \frac{1}{2} \times 9 \text{ yd} \times 4 \text{ yd} = 86 \text{ yd}^2 \]

57.)

\[ \text{Area} = \pi \times \text{radius}^2 = \pi \times \left(\frac{7 \text{ m}}{2}\right)^2 = \frac{49\pi}{4} \text{ m}^2 \approx 38.5 \text{ m}^2 \]

Find the surface area and volume of each of the following. Include appropriate units and round to the nearest tenth. SHOW ALL OF YOUR WORK! (CALCULATOR ALLOWED)

58.)

Surface Area: 

\[ \text{Surface Area} = 2 \times (\text{length} \times \text{width}) + 2 \times (\text{length} \times \text{height}) + 2 \times (\text{width} \times \text{height}) = 2 \times (9.5 \text{ in} \times 7 \text{ in}) + 2 \times (9.5 \text{ in} \times 2.8 \text{ in}) + 2 \times (7 \text{ in} \times 2.8 \text{ in}) = 185.2 \text{ in}^2 \]

Volume: 

\[ \text{Volume} = \text{length} \times \text{width} \times \text{height} = 9.5 \text{ in} \times 7 \text{ in} \times 2.8 \text{ in} = 185.3 \text{ in}^3 \]
59.) The cargo-carrying part of Billy’s truck has a length of 8.3 meters, a width of 3 meters, and a height of 4.2 meters. What is the maximum volume of sand that Billy’s truck can carry?

Answer: __________________________________

60.) A packaging company needs to know how much cardboard will be required to make boxes 18 inches long, 12 inches wide, and 10 inches high. How much cardboard will be needed for each box if there is no overlap in the construction?

Answer: __________________________________

61.) How much frosting will be needed to frost a cake that is a rectangular prism with the length of 13 inches, a width of 10 inches, and a height of 4 inches?

Answer: __________________________________