

2009-2010 Idaho 8th Grade Direct Mathematics Assessment

MR

817

STUDENTS DO NOT WRITE IN THIS AREA

ROUND 1

T: _____ R: _____ T: _____

You must solve all five problems on this assessment

1. Kyle's parents gave him \$175 to spend on school clothes at the mall. He has found the following items that he's interested in purchasing. Kyle bought one of each item.

Clothing	
Jeans	\$ 34.99
Shoes	\$ 54.98
Shirts	\$ 24.99
Hoodie	\$ 39.99
Socks	\$ 9.99

Show or explain how you found your answers.

Demonstrates basic use of thinking skills

- a. How much will the items cost him before sales tax?

$$\begin{array}{r}
 34.99 \\
 + 54.98 \\
 \hline
 89.97
 \end{array}
 +
 \begin{array}{r}
 24.99 \\
 + 39.99 \\
 \hline
 65.08
 \end{array}
 +
 \begin{array}{r}
 89.97 \\
 + 65.08 \\
 \hline
 155.05
 \end{array}
 +
 \begin{array}{r}
 155.05 \\
 + 9.99 \\
 \hline
 165.04
 \end{array}$$

Total cost is \$165.04

- b. Kyle will receive a discount of 1/3 off the cost before sales tax. What is his cost after the discount?

$$\begin{array}{r}
 165.4 \\
 \times 0.03 \\
 \hline
 49.62
 \end{array}
 \rightarrow
 \begin{array}{r}
 165.44 \\
 - 49.62 \\
 \hline
 115.82
 \end{array}$$

\$115.82 is the cost with discount

- c. After the discount, how much will his items cost, including a 6% sales tax?

$$\begin{array}{r}
 115.82 \\
 \times 0.06 \\
 \hline
 6.9492
 \end{array}
 +
 \begin{array}{r}
 115.82 \\
 + 6.92 \\
 \hline
 122.74
 \end{array}$$

Total cost with sales tax is \$175.32

Limited understanding of situation

- d. How much money will he have left after the discount and sales tax?

$$\begin{array}{r}
 175.00 \\
 - 122.67 \\
 \hline
 52.33
 \end{array}$$

You will have \$52.33 left over

Frequent computational errors

2. Ellie has been hired to help build playground fences. As she works with the sales representative, she makes a discovery. Follow the directions below to find out what Ellie discovered.
Show or explain how you found your answers.

- a. Complete the table of different rectangles having the same **area**, but different **perimeters**.

Area (sq. ft.)	Length (ft.)	Width (ft.)	Perimeter (ft.)
36	1	6	7
36	2	4	6
36	3	3	6
36	4	2	6
36	6	1	7

Minimal evidence of understanding the situation

- b. Complete the table of different rectangles having the same **perimeter**, but different **areas**.

Perimeter (ft.)	Length (ft.)	Width (ft.)	Area (sq. ft.)
20	1	9	9
20	2	8	16
20	3	7	21
20	4	6	24
20	5	5	25
20	6	4	24
20	7	3	21
20	8	2	16
20	9	1	9

Adequate solutions

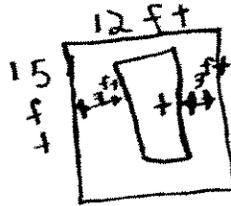
- c. Compare the information within each chart. Explain the relationship between the shapes of the playgrounds and the amount of fencing required to go around them.

all the numbers
 have the same
 perimeter or
 area.

Inadequate mathematical communication skills

3. Juan has decided to convert part of his bedroom floor into a trampoline. The trampoline is rectangular and will go in the center of the floor. His bedroom is 15 feet by 12 feet and the space between each side of the trampoline and the wall is 3 feet. Show or explain how you found your answers.

a. Draw and label a picture of the bedroom floor with the trampoline in the room.



b. What is the area of the bedroom floor, before the trampoline is installed?

$$\begin{array}{r} 12 \\ \times 15 \\ \hline 60 \\ 120 \\ \hline 180 \end{array}$$

180 ft² is the area

Adequate solutions and process

c. What is the area of the trampoline?

$$\begin{array}{r} 12 \\ - 3 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 15 \\ - 3 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 9 \\ \times 12 \\ \hline 18 \\ 81 \\ \hline 108 \end{array}$$

108 ft² is the area

Limited understanding of situation

d. What percent of the bedroom floor does the trampoline take up?

$$\frac{108}{180} = \frac{84}{180} = 46\%$$

Frequent computational error

4. Sara's scores on her first six math tests were: 81, 73, 96, 81, 85, and 82. Show or explain how you found your answers.

a. What are the mean, median, mode, and range of these tests?

$$\begin{array}{r} 96 \\ - 73 \\ \hline 23 \end{array}$$

mode = 81
median = 81
range = 23
mean = 83

$$\begin{array}{r} 81 \quad 96 \quad 235 \\ 73 \quad 85 \quad 1263 \\ + 81 \quad + 82 \quad 798 \\ \hline 235 \quad + 2637 \end{array}$$

Adequate solutions and processes

73, 71, 81, 82, 76

b. The teacher drops the lowest score out of these six tests. What is Sara's new mean?

$$\begin{array}{r} 81 \\ 81 \\ + 82 \\ \hline 244 \end{array}$$

$$\begin{array}{r} 96 \\ + 85 \\ \hline 181 \end{array}$$

$$\begin{array}{r} 181 \\ + 244 \\ \hline 425 \end{array}$$

$$\begin{array}{r} 75 \\ 5 \overline{) 425} \\ \underline{375} \\ 50 \\ \underline{50} \\ 0 \end{array}$$

75 = mean

Frequent computational errors

c. Sara now has five test scores. What is the lowest score she needs to earn on the next test, if she wants to raise her mean to 87?

$$\begin{array}{r} 87 \\ - 75 \\ \hline 12 \end{array}$$

she needs a score of 12 or better

Lack of process development

5. The Jonas family is installing a satellite system in their home. They may choose from the following packages:

Package A
\$100 installation fee
plus \$30 per month

Package B
Free installation
and \$40 per month

Show or explain how you found your answers.

- a. Write an expression or an equation for the cost of each package.

$$100 + 30 > 40$$

Limited understanding
of situation

- b. How much would the Jonas family pay to use Package A for two years? How much would Package B cost for two years?

$$\begin{array}{r} 30 \\ \times 12 \\ \hline 60 \\ 300 \\ \hline 360 \end{array}$$

$$\begin{array}{r} 100 \\ + 360 \\ \hline 460 \\ \times 2 \\ \hline 920 \\ \hline \$920 \end{array}$$

Limited
understanding of
the situation

- c. Which of the two packages would cost the Jonas family less over a two year period? How much will they save?

$$\begin{array}{r} 40 \\ \times 12 \\ \hline 80 \\ 400 \\ \hline 480 \\ \times 2 \\ \hline 960 \end{array}$$

Package B
\$960

Limited process
development

- d. How long after installation will the cost of the two packages be equal?

The 2 packages
will never equal
because 4 does not
go into 10 evenly

Minimal problem
solving strategies

Which prompt did you find to be the most difficult to solve?
Why?

1	2	3	4	5
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Which prompt did you find to be the least difficult to solve?
Why?

1	2	3	4	5
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