

MR

# The Direct Mathematics Assessment

# 643

STUDENTS DO NOT WRITE IN THIS AREA

ROUND 1

T: \_\_\_\_\_ R: \_\_\_\_\_ T: \_\_\_\_\_

MIG

ACM

Your teacher will read the entire test to you before you begin. It is important to solve the problems on this assessment. No calculators are allowed on this assessment.

1. A class of twenty-four students is going on a fishing trip on Saturday. The table shows the cost of the items needed for the trip.

Item	Cost
Worms	\$1.69 each dozen
Mealworms	\$1.50 each carton
Scented marshmallows	\$2.60 each jar
Hot dogs	\$2.50 each package
Boat gas	\$2.50 each gallon

- a. The class is going to need three dozen worms, two cartons of mealworms, and two jars of scented marshmallows. What is the total cost of these items? *Show and label your work.*

Handwritten work for problem a:

$$\begin{array}{r}
 \$1.50 \text{ carton of mealworms} \\
 \times 2 \text{ cartons} \\
 \hline
 \$3.00
 \end{array}$$

$$\begin{array}{r}
 \$1.69 \text{ dozen worms} \\
 \times 3 \text{ dozen} \\
 \hline
 \$5.07
 \end{array}$$

$$\begin{array}{r}
 \$2.60 \text{ scented marshmallows} \\
 \times 2 \text{ jars} \\
 \hline
 \$5.20
 \end{array}$$

$$\begin{array}{r}
 \$3.00 \text{ mealworms} \\
 \$5.07 \text{ worms} \\
 \$5.20 \text{ marshmallows} \\
 \hline
 \$13.27
 \end{array}$$

The total cost of the items is \$13.27

- b. Each student will eat two hot dogs for lunch. There are ten hot dogs per package. How many packages will the class need to buy? What is the total cost of the hot dogs? *Show and label your work.*

Handwritten work for problem b:

$$\begin{array}{r}
 24 \text{ students} \\
 \times 2 \text{ hot dogs} \\
 \hline
 48 \text{ students}
 \end{array}$$

$$\begin{array}{r}
 10 \text{ hot dogs} \\
 \times 5 \text{ packages} \\
 \hline
 50 \text{ hot dogs}
 \end{array}$$

$$\begin{array}{r}
 \$2.50 \text{ package of hot dogs} \\
 \times 5 \text{ packages} \\
 \hline
 \$12.50
 \end{array}$$

The class would need 5 packages of hot dogs which would equal \$12.50 and they would have 2 hot dogs left over.

- c. The class will need to buy twenty gallons of gas for the boat engine. How much money will they spend on gas? *Show and label your work.*

Handwritten work for problem c:

$$\begin{array}{r}
 2.50 \text{ gallon of gas} \\
 \times 20 \text{ gallons} \\
 \hline
 50.00
 \end{array}$$

The class will spend \$50.00 on gas.

Demonstrates effective or multiple problem-solving strategies.

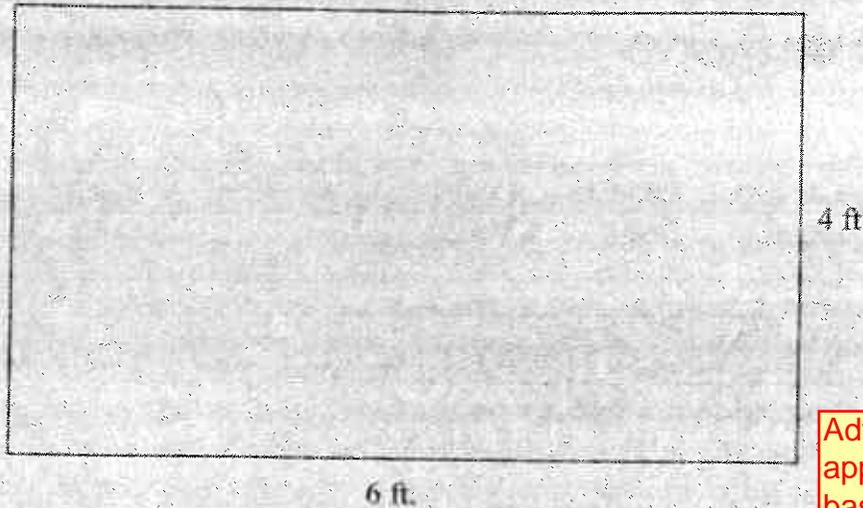
- d. On Monday 1/6 of the students returned permission slips. On Tuesday another 1/6 of the students returned permission slips. What **fraction** of the students still needs to return a permission slip? *Show and label your work.*

$$\frac{1}{6} + \frac{1}{6} = \frac{2}{6} \text{ or } \frac{1}{3}$$

$$\frac{2}{6} + \frac{4}{6} = \frac{6}{6} \text{ or } \frac{1}{3} + \frac{2}{3} = \frac{3}{3}$$

4/6 or 2/3 of the students need to bring back their permission slips.

2. Molly and her mother made a quilt. The quilt was 6 feet long and 4 feet wide.



Advanced application of basic skills.

a. How many inches of ribbon were needed to go around the outside edge of the quilt? Show and label your work.

$$\begin{array}{r} \text{length } 6 \\ \text{length } 6 \\ \text{width } 4 \\ \text{width } 4 \\ \hline 20 \end{array}$$

$$\begin{array}{r} 20 \text{ ft. of ribbon} \\ \times 12 \text{ inches} \\ \hline 40 \\ 200 \\ \hline 240 \text{ inches of ribbon} \end{array}$$

Molly and her mother need 240 inches of ribbon to go on the outside edge of the quilt.

b. How many 12x12 inch squares did Molly need to complete her quilt? Show and label your work

$$\begin{array}{r} 6 \text{ ft. length} \\ \times 4 \text{ ft. width} \\ \hline 24 \end{array}$$

$$\begin{array}{r} 24 \text{ ft.} \\ \times 12 \text{ in.} \\ \hline 48 \\ 240 \\ \hline 288 \text{ in} \end{array}$$

Length x width = area 288 in

$$\begin{array}{r} 24 \text{ squares} \\ 12 \overline{) 288} \\ \underline{24} \\ 48 \\ \underline{48} \\ 0 \end{array}$$

Molly needs 24 squares to complete her quilt.

c. If 2/3 of the squares are green and 1/3 are yellow, how many yellow squares would Molly need? Show and label your work

$$8 \overline{) 24} \text{ squares}$$

$$\begin{array}{r} 8 \\ \times 2 \text{ green squares} \\ \hline 16 \text{ squares} \end{array}$$

$$\begin{array}{r} 8 \\ \times 1 \text{ yellow squares} \\ \hline 8 \end{array}$$

$$\begin{array}{r} 16 \text{ green squares} \\ + 8 \text{ yellow squares} \\ \hline 24 \end{array}$$

Molly would need 8 yellow squares.

3. a. Complete the table below.  
Show your work.

r	$3r - 1$
1	2
3	8
7	20
10	29
12	35

$3 \times 1 - 1 = 2$   
 $3 \times 3 - 1 = 8$   
 $3 \times 7 - 1 = 20$   
 $3 \times 10 - 1 = 29$   
 $3 \times 12 - 1 = 35$

$\begin{array}{r} 3 \\ \times 12 \\ \hline 36 \\ -1 \\ \hline 35 \end{array}$

- b. Look at the following table. Complete the table and then write the rule for the table. Show your work.

x	$5x + 1$
1	6
3	16
6	31
8	41
11	56

$\begin{array}{r} 3 \\ \times 5 \\ \hline 15 \\ +1 \\ \hline 16 \end{array}$

$\begin{array}{r} 11 \\ \times 5 \\ \hline 55 \\ +1 \\ \hline 56 \end{array}$

Higher-order thinking skills.

4. George has six pairs of pants (red, blue, tan, orange, white, and green) and three shirts (purple, yellow, and gold).

- a. George's room is totally dark due to a power outage. What is the probability he will get a pair of orange or blue pants out of the closet the first time? Write the probability as a fraction. Show and label your work.

$\frac{1 \text{ pair of pants orange}}{6 \text{ pairs of pants}}$

$\frac{1 \text{ pair is blue}}{6 \text{ pairs of pants}}$

$\frac{1 \text{ pair} + 1 \text{ orange}}{6 \text{ pairs} + 6 \text{ pairs}} = \frac{2}{6} \text{ or } \frac{1}{3}$

There is a  $\frac{1}{3}$  chance that George will get an orange or blue pair of pants.

- b. What is the probability that George will pick a yellow or gold shirt? Write the probability as a fraction. Show and label your work.

$\frac{1 \text{ gold}}{3 \text{ shirts}}$

$\frac{1 \text{ yellow}}{3 \text{ shirts}}$

$\frac{1 \text{ yellow}}{3 \text{ shirts}} + \frac{1 \text{ gold}}{3 \text{ shirts}} = \frac{2}{3}$

There is a  $\frac{2}{3}$  chance that George will grab a yellow or gold shirt.

- c. If George chooses one shirt and one pair of pants, how many possible combinations will he have to choose from? Show and label your work.

There are 18 different combinations

$\begin{array}{r} 6 \text{ pants} \\ \times 3 \text{ shirts} \\ \hline 18 \text{ combinations} \end{array}$

$\begin{array}{r} 6 \text{ pants} \\ \times 3 \text{ shirts} \\ \hline 18 \text{ combinations} \end{array}$

Appropriate processes accurately completed.

5. Your family is taking a road trip during the next school break. You drive 60 miles per hour. On the first day of your trip, you will drive a total of eight hours.

a. Complete the table below to show how many miles your family will travel the first day.

		Driving Time							
Hours		1	2	3	4	5	6	7	8
Miles		60	120	180	240	300	360	420	480
		60 x 2 ----- 120	120 + 60 ----- 180	180 + 60 ----- 240	240 + 60 ----- 300	300 + 60 ----- 360	360 + 60 ----- 420	420 + 60 ----- 480	

b. On the first day of your trip your family starts driving at 6:45 a.m. You stop to eat breakfast at 9:15 a.m. How long did your family drive before stopping for breakfast? *Show and label your work.*

$$\begin{array}{r}
 9:15 \text{ am} \\
 - 6:45 \text{ am} \\
 \hline
 2:70 \text{ hours} \\
 + 60 \text{ min.} \\
 \hline
 3:10
 \end{array}$$

My family drove for 3 hours and 10 min

Minimal or non-existent errors.

c. While driving, your family takes the following breaks: 35 minutes for breakfast, 45 minutes for lunch, and one hour for dinner. How much time was spent on breaks? *Show and label your work.*

$$\begin{array}{r}
 35 \text{ min. breakfast} \\
 45 \text{ min. lunch} \\
 60 \text{ min dinner} \\
 \hline
 140 \text{ min.}
 \end{array}$$

$$\begin{array}{r}
 60 \overline{)140} \\
 \underline{120} \\
 20
 \end{array}$$

2:20 or 2:20

My family took 2 hours and 20 min. in breaks.

d. If your family travels 750 miles, how many hours of driving time will it take driving 60 miles per hour? *Show and label your work.*

$$\begin{array}{r}
 12:30 \\
 60 \text{ mph } \overline{)750} \\
 \underline{60} \\
 150 \\
 \underline{120} \\
 30
 \end{array}$$

They would drive for 12 hours and 30 min.