Montana Comprehensive Assessment System (*MontCAS, Phase 2*)

Criterion-Referenced Test (CRT)

COMMON CONSTRUCTED-RESPONSE ITEM RELEASE
MATHEMATICS, GRADE 8

2005

OPI

OFFICE OF PUBLIC INSTRUCTION

You may use a calculator during this session.

25. The drama club put on a play on Friday night. They sold some tickets in advance and some tickets at the door. A total of 300 tickets were sold.

   a. Using x to represent the number of tickets sold in advance, write an expression that represents the number of tickets sold at the door.

   The club charged $3 for tickets sold in advance and $4 for tickets sold at the door. The total amount of money collected from tickets was $1072.

   b. Again using x to represent the number of tickets sold in advance, write one equation that can be used to find the number of $3 tickets and the number of $4 tickets sold. Your equation should contain no variables except x.

   c. How many $3 tickets and how many $4 tickets were sold? Show your work or explain how you found your answer.

Scoring Guide

Score	Description
4	4 points
3	3 points
2	2 points
1	1 point OR Student shows minimal understanding of writing the expression or the equation or of solving the problem.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Training Notes:

Part a: 1 point for the correct answer, **300 – x**

Part b: 1 point for the correct equation, **1072 = 3x + 4(300 – x)**, or equivalent, or for correct equation based on student's answer to Part a

Part c: 2 points for the correct answers, **128 $3 tickets and 172 $4 tickets,** or for correct answers based on student's equation in Part b, with work or explanation.
Note: Student does NOT have to use the algebraic solution.
OR

 1 point for the correct answers without work or explanation.
or
for 1 correct answer with work shown.
or
for some correct strategy shown.

a. $300 - x = d$
total   dinner   door
tickets   tickets   tickets

b. $^{\$}3x + {}^{\$}4(300-x) = {}^{\$}1072$

c. $^{\$}3x + {}^{\$}4(300-x) = {}^{\$}1072$

$3x + 1200 + {}^{-}4x = 1072$

$-x + 1200 = 1072$ (−1200, −1200)

$-x = {}^{-}128$

$x = 128$

128 tickets
at $\$3$ were sold

172 tickets $300 - 128 = 172$
at $\$4$ were sold

a. let y= tickets sold @ the door

$300 - x = y$

b. $3x + 4x = 1072$

c. $3x + 4y = 1072$

$\quad 300 - x = y$

$300 - x = y$
$-300 -300$

$-x = y - 300$

$x = -y + 300$

$3(-y + 300) + 4y = 1072$

$-3y + 900 + 4y = 1072$

$900 + y = 1072$

$y = 172$

note to self:
=TABLE=

172 tickets were sold at the door and 128 tickets were sold in advance

If you substitute 128 for x and 172 for y you get $1072.

Score Point 2

Sample 1

a. $300 - x =$ tickets sold at the door

$(x =$ tickets sold in advance$)$

b. $300 - x = \left(\dfrac{10.2 - 3x}{4}\right)$?

c. $3 - 126$

$4 = 174$

Score Point 1

Sample 1

$a = 300 - x = n$ (tickets sold at the door)

$b = \#1072 \div 2 = n \; (536)$

$c = \#1072 \div 2 = 536$

$536 \div 4 = 134 \tfrac{1}{4} \text{ tickets},$

$536 \div 3 = 179 \tfrac{1}{3} \text{ tickets},$

Sample 2

$a. \; 300 = x + d$

$x = $ tickets sold in advance
$d = $ tickets sold at door

$b. \; 1072 = 3x + \#268$

$c. \; 1072 = 848 + 208$

$1072 = 3, 6 \; \underline{\quad}$

$300 = x + d$

$996 \cdot x = 186$

$800 \cdot 1 = x$

$574 \cdot 1 = 143.5$

$900 \cdot 3d = 3x$

$800 \div 2 = 150$

$1072 = (900 - 3d) + d$

$150 \cdot 3 = 450$

$1072 = 900 - 2d$

$549 = 600$

$1072 + 2d = 900$

$450 + 600 = 1050$

$2d = 172$

$22 \div 3 = 7.3$

$d = 86$

$22 \div 4 = 5.5$

$x = 271$

$155.5 \div 4 = 622$

$44.5 \cdot 3 = 433.5$

$622 + 433.5 = 1055.5$

$16.5 \div 3 = 6.5$

$6.5 \div 4 = 4.125$

$155.5 \cdot$

I chose a number and multiplied it by 3+4. Then once I found one of the right numbers, I found the other. Next I added them together to get my answers.

13.

X = tickets in advance $3.00

Y = tickets at door $4.00

$300

$4.00 tickets = 42½ tickets

$3.00 tickets = 43 tickets

You may NOT use a calculator during this session.

68. Trisha surveyed 28 of her classmates by asking them to list the activities in which they participate in the summer. This table shows the results.

Summer Activities

Activity	Percent of Students
Read	75%
Play sports	21%
Visit friends	33%

a. On the grid in your Student Response Booklet, make a bar graph of these data.

b. Trisha wanted to make a circle graph to display her results. Explain why a circle graph would not be a good choice for these data.

c. What is a question that Trisha could have asked about summer activities so that the results could be displayed in a circle graph?

Scoring Guide

Score	Description
4	4 points
3	3 points
2	2 points
1	1 point
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Training Notes:

Part a. 2 points for a correct bar graph, with axes correctly labeled, scale correct, and data correctly represented.
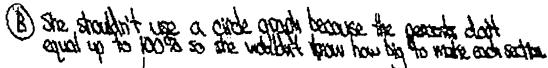OR
1 point for a bar graph that is mostly correct. Some labels may be missing or there may be interval errors.

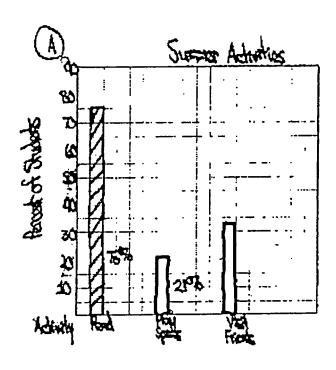Part b. 1 point for an explanation why a circle graph is not good for these data.
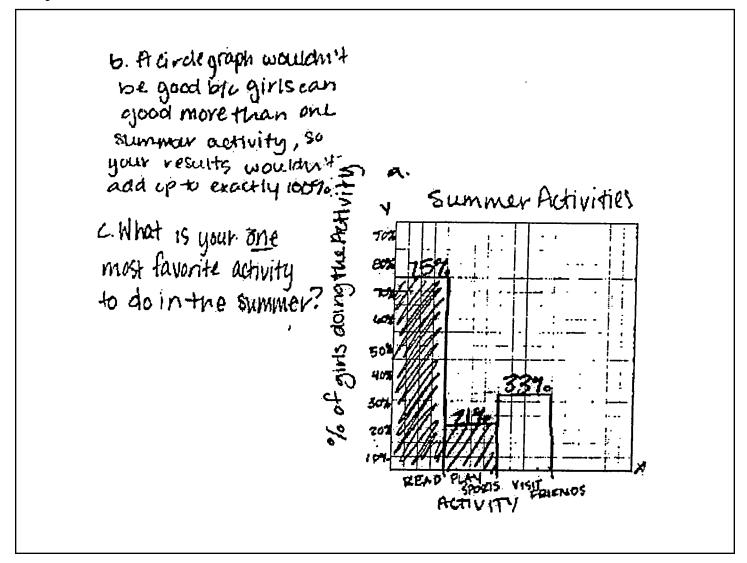For example, "To use a circle graph the sum of the percents must be 100%."

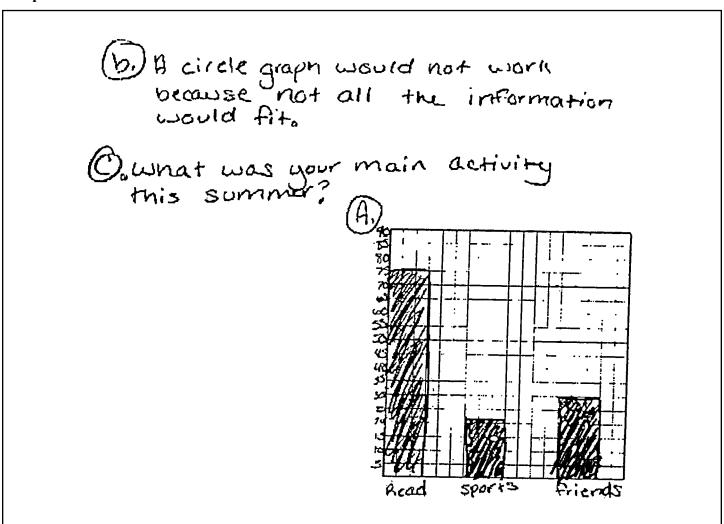Part c. 1 point for a question that will give results that total 100%.
For example, "What is your favorite summer activity?"

B) She shouldn't use a circle graph because the percents don't equal up to 100% so she wouldn't know how big to make each section.

C) What is your favorite summer activity? This question would make the percents equal up to 100%.

A) Summer Activities

Percent of Students

35%

21%

Activity   Read   Play sports   Visit Friends

b. A circle graph wouldn't be good b/c girls can good more than one summer activity, so your results wouldn't add up to exactly 100%.

c. What is your *one* most favorite activity to do in the summer?

a.

Summer Activities

y

% of girls doing the activity

75%

33%

21%

70%
60%
70%
60%
50%
40%
30%
20%
10%

READ PLAY
       SPORTS VISIT
              FRIENDS

ACTIVITY

b.) A circle graph would not work because not all the information would fit.

c. What was your main activity this summer?

A.

A

B It could Be.

C It could Be.

a. See graph b. Because There aren't enough catagories too make a circle graph.

C. Did anyone do arts and Crafts. Or go and visit other relatives. Did anyone go to the water slides? Did anyone go camping?

Summer Activites