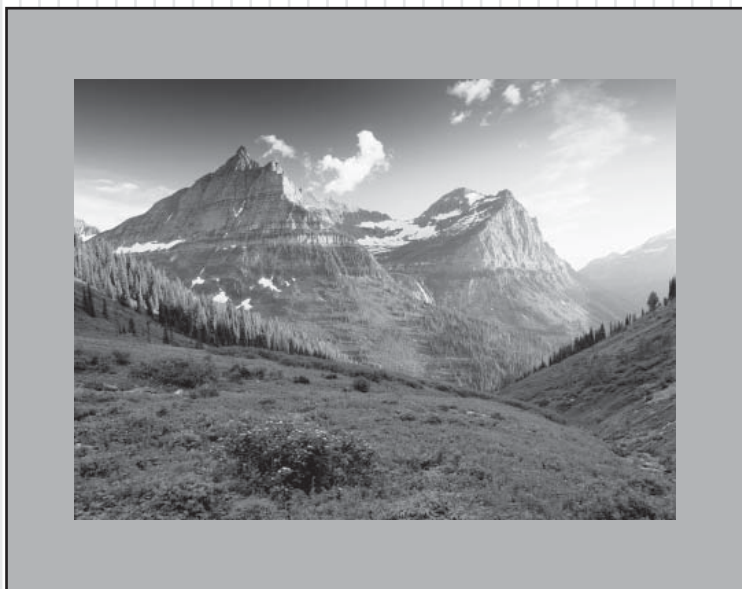


Montana
Comprehensive Assessment
System (MontCAS, Phase 2)
Criterion-Referenced Test (CRT)

COMMON CONSTRUCTED-RESPONSE ITEM RELEASE
MATHEMATICS, GRADE 8

2009



OFFICE OF PUBLIC INSTRUCTION

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Mathematics

Session 1 (No Calculator)

You may NOT use a calculator during this session.

Write your answer in the space provided for it in your Student Response Booklet. Show all of your work.

23. Sample 1 of a silver alloy weighs 100 ounces and contains 20% pure silver.
- How many **ounces** of pure silver does sample 1 contain?
 - Sample 2 of a silver alloy weighs 320 ounces and is 75% pure silver. How many ounces of sample 2 are **not** pure silver?
 - Sample 3 is made by combining 60 ounces of pure silver with sample 1. What is the **percent** of pure silver in sample 3? Show 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 demonstrates minimal understanding of percents and/or proportions.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Scoring Notes

- Part a: 1 point for correct answer, **20 (ounces)**
- Part b: 1 point for correct answer, **80 (ounces)**
- Part c: 2 points for correct answer, **50%**, with work or explanation given
OR
1 point for correct answer, without appropriate work or explanation given
or
for correct strategy shown, for example, finds 80 ounces and 160 ounces

Sample Response:

- 20% of 100 ounces is 20 ounces.
- $\frac{1}{4} \times 320 = 80$
- 20 ounces + 60 ounces = 80 ounces of silver. $100 + 60 = 160$ ounces of sample. $80 \div 160 = 50\%$

Score Point 4

Sample 1

$$\begin{array}{r} a. 100 \\ \times .2 \\ \hline 200 \end{array}$$

20 ounces are pure silver

$$\begin{array}{r} b. 1320 \\ \times .75 \\ \hline 1600 \\ 99600 \\ \hline 99600 \end{array}$$

$$\begin{array}{r} 800 \\ \times .75 \\ \hline 240 \\ 6000 \\ \hline 6000 \end{array}$$

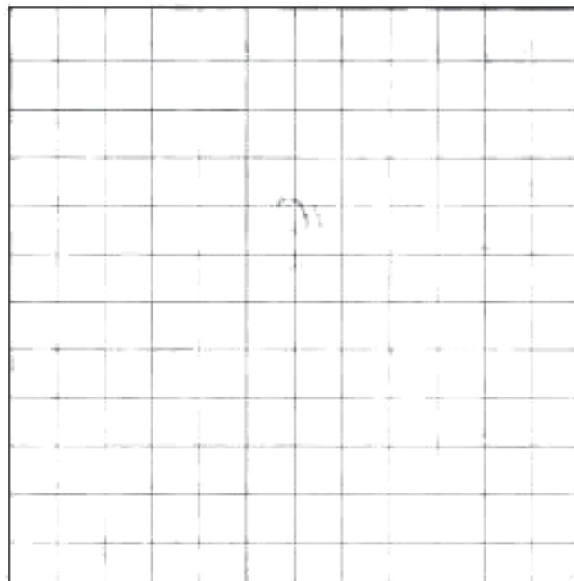
80 ounces are not pure silver

c. $160 = 80$ ounces of pure silver

$$\begin{array}{r} 3. 160 \\ \times .5 \\ \hline 80.0 \end{array}$$

$$\begin{array}{r} 160 \\ - 80 \\ \hline 80 \end{array}$$

50% of sample 3
is pure silver



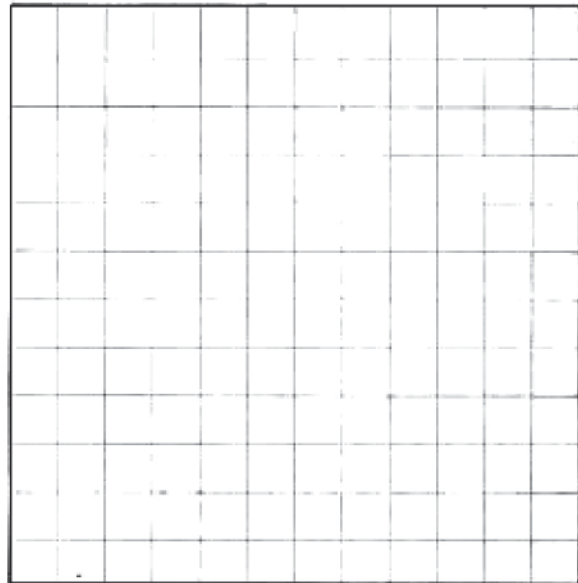
Score Point 4

Sample 2

a.
$$\begin{array}{r} 100 \\ \times 0.2 \\ \hline 20.0 \end{array}$$
 20 ounces

b.
$$\begin{array}{r} 320 \\ \times 0.25 \\ \hline 1600 \\ + 6400 \\ \hline 80.00 \end{array}$$
 80 ounces

c.
$$\begin{array}{r} 20 \text{ ounces pure} \\ + 60 = \underline{80 \text{ ounces pure}} \\ 60 \quad 160 \text{ ounces total} \\ 100 \\ = \frac{1}{2} \\ = \underline{50\% \text{ pure}} \end{array}$$



Score Point 3

Sample 1

$$a = 100 \div .20 = 20 \text{ oz.}$$

$$b = 320 \div .75 = 240 \text{ oz.}$$

$$c. 160 \text{ oz}$$

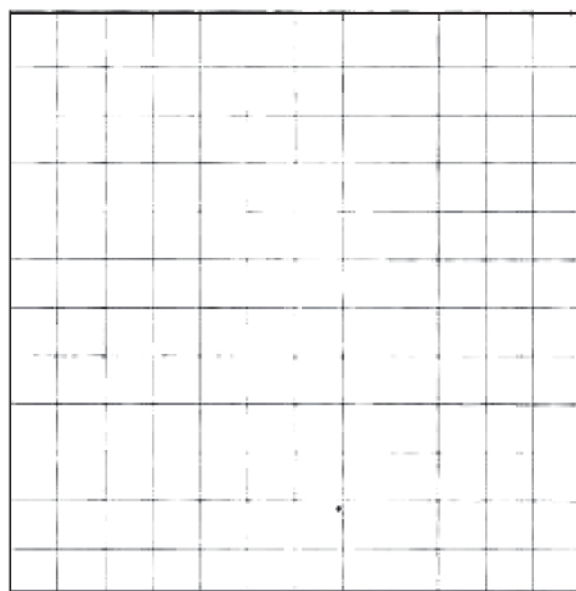
$$20 \text{ oz} + 160 \text{ oz} = 80 \text{ oz}$$

$$a \quad \frac{x}{100} = \frac{20\%}{100} \quad 20 \div 100 = 2,000 \div 100 = \boxed{20 \text{ oz}}$$

$$b. \frac{x}{320} = \frac{25\%}{100} \quad 320 \div 25 =$$

$$\begin{array}{r} 320 \\ \times 25 \\ \hline 1600 \\ 8000 \\ \hline 8000 \end{array} \quad 8,000 \div 100 = \boxed{80 \text{ oz}}$$

$$c. \frac{20 + 160}{160 \text{ oz}} \quad \frac{80 \text{ oz pure silver}}{160 \text{ oz}}$$



Score Point 3

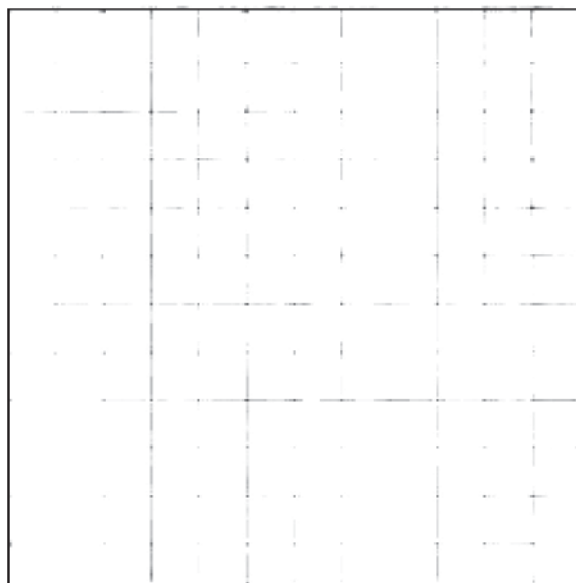
Sample 2

- (4) 20 acres
 (5) 140 acres
 (6) 5020

$$\begin{array}{r}
 220 \\
 \times 1.25 \\
 \hline
 2200 \\
 22000 \\
 \hline
 27500
 \end{array}$$

$$80 = \frac{1}{2} \text{ of } 160$$

$$2/160 \text{ acres}$$



Score Point 2

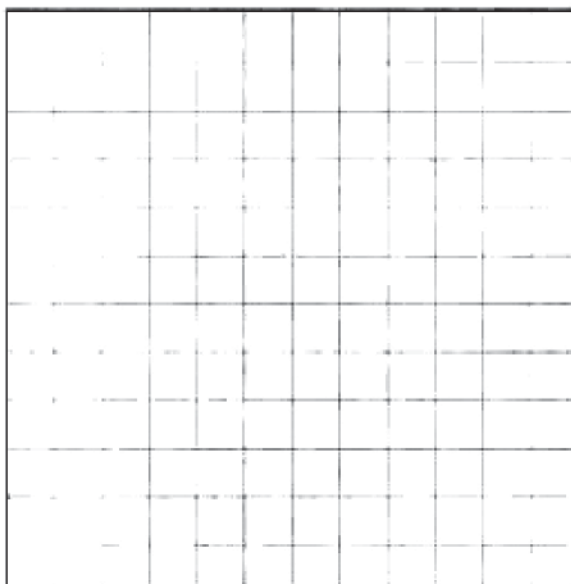
Sample 1

Sample 1 weighs 100 ounces & contains 20% silver

a. Sample 1 contains 20 ounces of pure silver because 20% of 100 is 20.

b. Sample 2 is 80 ounces are not pure silver
 $320 \div 2 = 160 \div 2 = 80 = 25\%$

c. Sample 3 would have 80 oz. of pure silver because #1 has 20 ounces plus 60 oz. from sample 3.



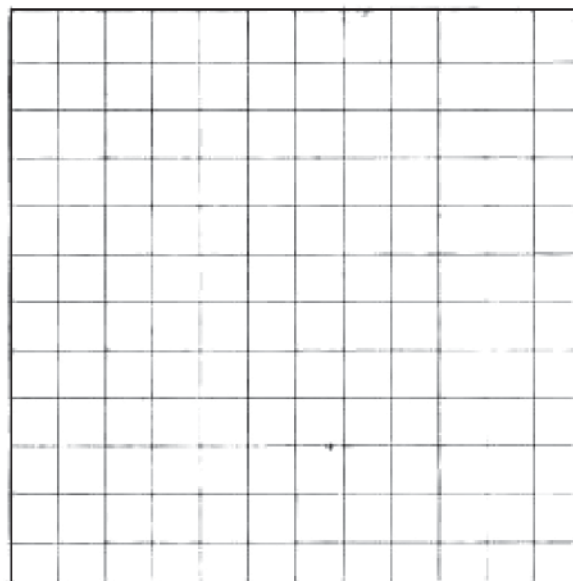
Score Point 2

Sample 2

- a. Sample one contains 20 ounces of pure silver.
 b. 80 ounces of silver alloy are not pure silver.
 c. 80% is Pure Silver,

60 ounce
 $+ 20\% \text{ of } 100 = 20$
80% of Pure Silver,

$$\begin{array}{r} 212 \\ 720 \\ - 80 \\ \hline 240 \end{array} \quad \begin{array}{r} 80 \\ + 80 \\ 80 \\ 80 \\ \hline 320 \end{array}$$



A-100 ounces and has 20% pure silver

20% = $\frac{1}{5}$ (i converted the %)

$\frac{1}{5}$ of 1 = .2 (i used my fraction)

5 ounces of pure silver

B- 75% = $\frac{3}{4}$ (i used the four when i $\div$) and the three when i multiplied
 $320 \div 4 = 80 \times 3 = 240$
 320
 $320 - 240 = 80$ 80 ounces aren't pure silver

C- 60 ounces + 5 ounces = 65 ounces

$$\frac{65}{100} \div 5 = \frac{13}{20}$$

$$\left(\frac{13}{20} \right)$$

Score Point 1

Sample 2

A) $100 \div .20$

(20 ounces)

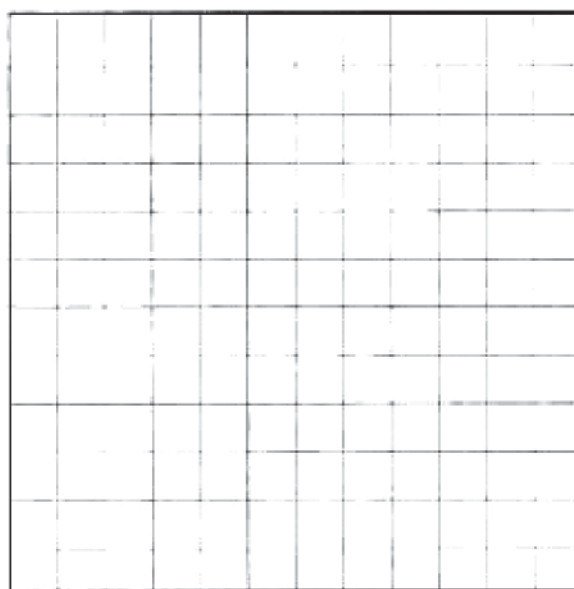
B)
$$\begin{array}{r} 320.00 \\ .75 \\ \hline 11600.00 \\ 22400.00 \\ \hline 24000.00 \end{array}$$

(24 oz)

C) 160 oz

$$\begin{array}{r} 60\% \\ +20\% \\ \hline \end{array}$$

(80%)



Score Point 0

Sample 1

A: 2

B: 240

C. $100 + 60 = 160 \text{ oz}$ • 52% pure silver
S: 1 + S: 3

