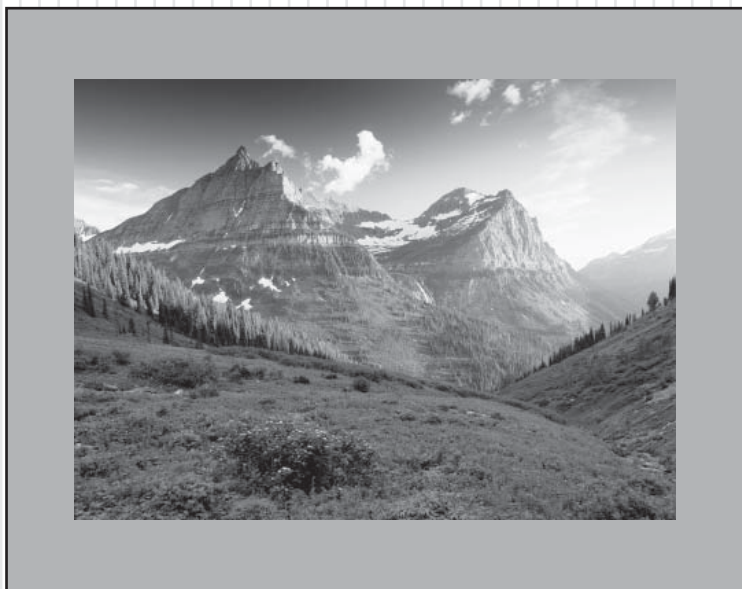


Montana
Comprehensive Assessment
System (MontCAS, Phase 2)
Criterion-Referenced Test (CRT)

COMMON CONSTRUCTED-RESPONSE ITEM RELEASE
MATHEMATICS, GRADE 7

2009



OFFICE OF PUBLIC INSTRUCTION

© 2009 Measured Progress. All rights reserved.

For information, contact Measured Progress, P.O. Box 1217, Dover, NH 03821-1217.

Printed in the United States of America.

Mathematics

Session 3 (Calculator)

You may use a calculator during this session.

Write your answer in the space provided for it in your Student Response Booklet.

73. A research company conducted a food allergy study.

- a. In the study, 15 out of 1,500 men were allergic to wheat. What percent of the men were allergic to wheat? Show or explain how you know.
- b. In the same study, 5 out of 2,000 women were also allergic to wheat. The population of a city includes approximately 198,000 men and 214,000 women. Based on the research company's data, how many men and women in this city can be expected to be allergic to wheat? Show or explain how you know.

Scoring Guide

Score	Description
4	4 points
3	3 points
2	2 points
1	1 point or Student demonstrates minimal understanding of percents.
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: 2 points for the correct answer, **Men: 1%**, with work or explanation

OR

1 point for a correct answer with no work
or
for correct strategy but the answer is incorrect

Part b: 2 points for the correct answer, **1,980 men and 535 women**, or **2,515 men and women**, with appropriate work or explanation

Note: Students can get full credit for giving both amounts separately or the sum of the amounts.

OR

1 point for the correct answer, with no work or explanation
or
for correct strategy shown, but there are computation errors

Sample Response:

Men: 1% of 198,000 = 1,980

Women: $\frac{5}{2,000} = \frac{x}{214,000}$ $\frac{1}{400} = \frac{x}{214,000}$ $4x = 2,140x = 535$

Men + women: 1,980 + 535 = 2,515, but not necessary to find sum

Score Point 4

Sample 1

a.

$$\frac{15}{1800} \div \frac{15}{15} = \frac{1}{120}$$

$$100 \overline{) 0.01} \underline{1.00}$$

1% of men are allergic to wheat.

b.

$$\frac{5}{2000} = \frac{5}{5} \cdot \frac{1}{400} = \frac{1}{400}$$

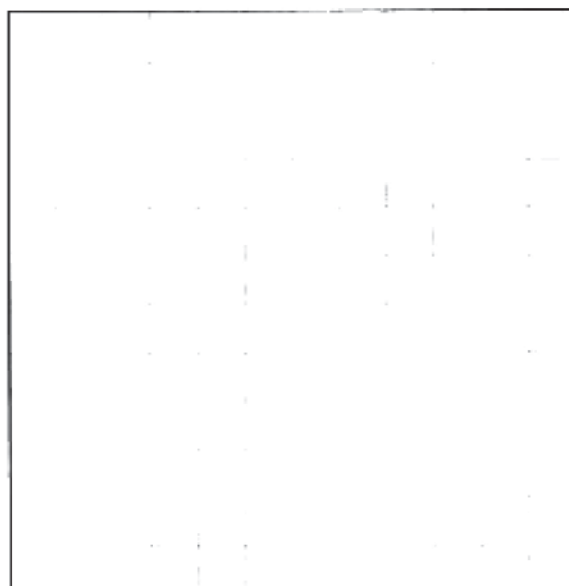
0.25% of women have it.

$$\begin{array}{r} 214000 \\ \times 0.0025 \\ \hline 535 \end{array}$$

$$\begin{array}{r} 198,800 \\ \times 0.01 \\ \hline 19,880.69 \end{array}$$

women: 535

men: 1980



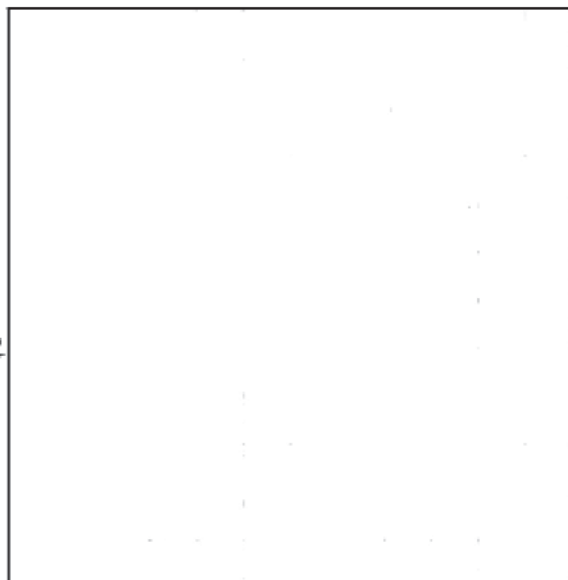
$$a. \frac{15 \cdot 5 \cdot 3}{1500 \cdot 5 \cdot 300} \quad \frac{3}{300} \div \frac{3}{3} = \frac{1}{100} \text{ or } 1\%$$

$$b. \frac{5}{2000} \div \frac{5}{5} = \frac{1}{400} = .25\%$$

$$198,000 \cdot 0.01 = 1980 \text{ men}$$

$$214,000 \cdot 0.0025 = 535 \text{ women}$$

I know that 1980 men in the city will have allergies to wheat because 1% of 198,000 is 1980. I know that 535 women will have allergies to wheat because .25% of 214,000 is 535.



Score Point 3

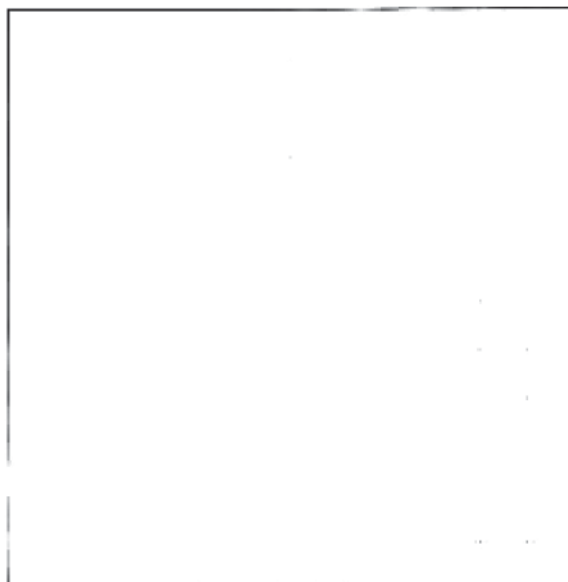
Sample 1

A. 1% of were allergic to wheat. How I know this is because 15 is $\frac{1}{100}$ of 1500. Then you make $\frac{1}{100}$ into a decimal which is 0.01 then you multiply 0.01 by 100 to get the percent of men who are allergic to wheat.

B. 25,335 men and women are allergic to wheat in this city. How I know this because 0.25% of ~~men~~ women are allergic to wheat. So you would multiply 214,600 by 0.25% and get 536.

Then you multiply 198,000 by 1% and get 19800.

Then you add 19,800 with 536 then you have your answer



Score Point 3

Sample 2

$$a - \frac{15}{15000} = \frac{x}{100}$$

$$\frac{1500}{1500} = \frac{1500x}{1500}$$

$$1 = .01 \boxed{19}$$

b - 19% of 19500 =

1950 men
5350 women

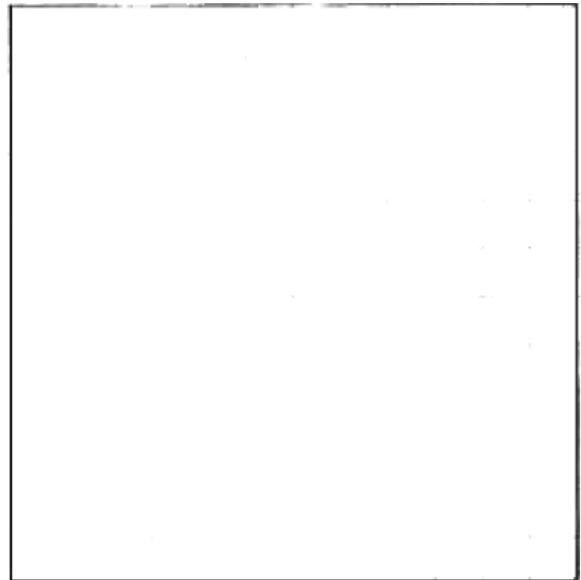
$$\frac{5}{2000} = \frac{x}{100}$$

$$\frac{500}{2000} = \frac{2000x}{2000}$$

$$.25 = 25\% \text{ of } 21,000 =$$

1980
+ 5350

55480 allergic to
wheat

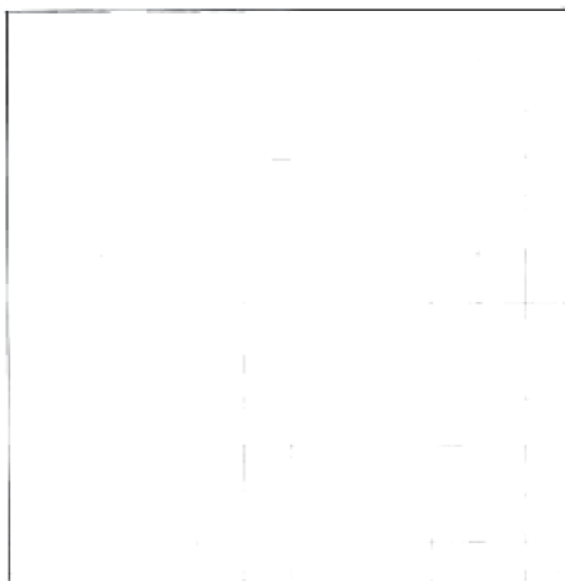


Score Point 2

Sample 1

A. $\frac{15}{1500} = \frac{x}{100}$ $x = \underline{1}\%$

B. $\frac{20}{3500} = \frac{x}{412000}$ $x = 2,354$ people will be allergic to wheat.



Score Point 2

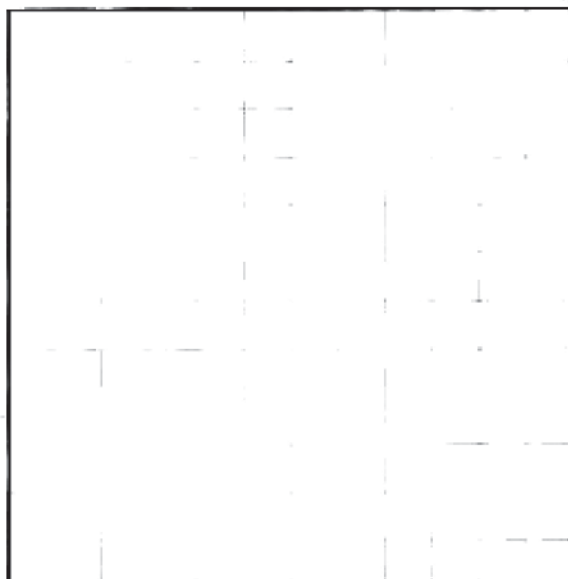
Sample 2

A. 15 percent of men were allergic to wheat because 1500 is the whole value, and 15 men were allergic, so the answer is 15 percent were allergic to wheat

B. 214,000

$$\begin{array}{r} \div 2000 \\ \hline 107 \\ \times 5 \\ \hline 535 \\ \text{women} \end{array}$$

$$\begin{array}{r} 198,000 \\ \div 1500 \\ \hline 132 \\ \times 15 \\ \hline 1980 \\ \text{men} \end{array}$$



Score Point 1

Sample 1

(A) 10% of the men were allergic to wheat.

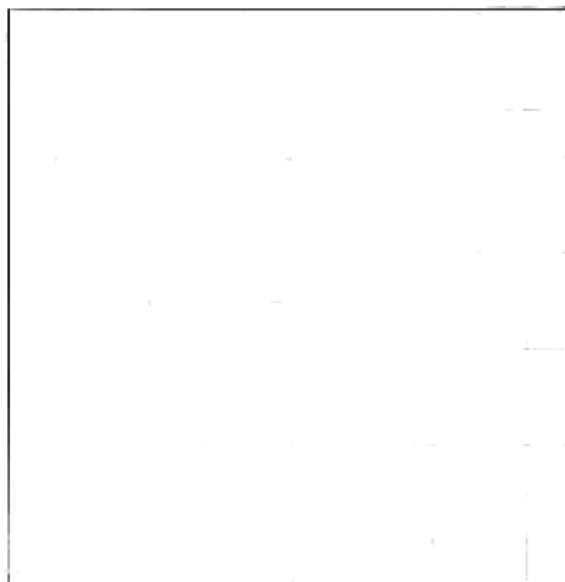
$$\begin{array}{r} .010 \\ 1500 \overline{) 15,000} \\ \underline{15,000} \\ 0 \end{array}$$

(B) 239 people in this town are allergic to wheat.

$$\begin{array}{r} 132 \\ 15,000 \overline{) 19,860} \\ \underline{15,000} \\ 4,860 \\ \underline{4,500} \\ 360 \end{array}$$

$$\begin{array}{r} 107 \\ 2,000 \overline{) 214,000} \\ \underline{20,000} \\ 14,000 \\ \underline{14,000} \\ 0 \end{array}$$

$$\begin{array}{r} 132 \\ + 107 \\ \hline 239 \end{array}$$

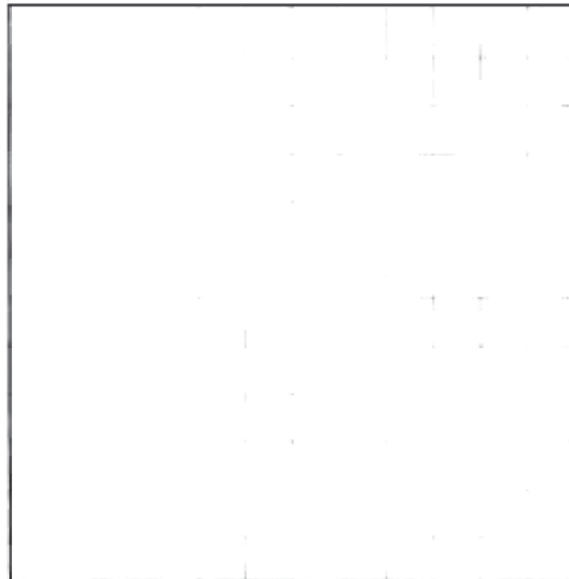


Score Point 1

Sample 2

21% because you'd win 600 numbers

$$6.10300 = 5\%$$

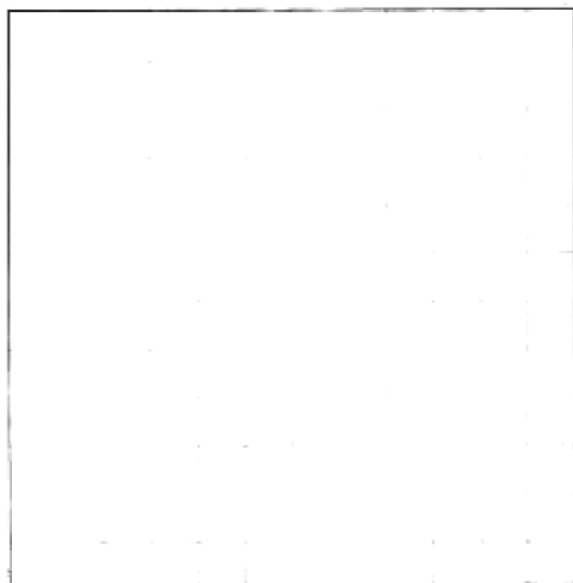


Score Point 0

Sample 1

A). 25% because 150 is half so 15 must be 25%.

B). 50% because 25% of women are allergic and men are 25% also so $25 + 25 = 50\%$.



A) 15 out of 1,500 men were allergic to wheat which is 15% out of 1,500. $15 - 1,500 = 225$ men

B.) 5 out of 2000 women were allergic to wheat.

I would say my best guess would be about 28 people would be allergic to wheat in this city or maybe even 50 people could be allergic.

