MCAS Review

Topic #9: Full Practice Test 5

ANSWER KEY

Item No.	Page No.	Reporting Category	Standard	Correct Answer (MC/SA)*
1	245	*Geometry*	10.G.7	D
2	245	*Measurement*	10.M.1	C
3	246	*Data Analysis, Statistics, and Probability*	10.D.2	A
4	246	*Data Analysis, Statistics, and Probability*	10.D.1	D
5	247	*Patterns, Relations, and Algebra*	10.P.2	C
6	247	*Number Sense and Operations*	10.N.2	D
7	247	*Patterns, Relations, and Algebra*	10.P.4	A
8	247	*Data Analysis, Statistics, and Probability*	10.D.1	B
9	248	*Number Sense and Operations*	10.N.4	D
10	248	*Patterns, Relations, and Algebra*	10.P.1	B
11	248	*Number Sense and Operations*	10.N.2	C
12	248	*Number Sense and Operations*	10.N.3	C
13	249	*Data Analysis, Statistics, and Probability*	10.D.1	B
14	249	*Number Sense and Operations*	10.N.1	B
15	250	*Number Sense and Operations*	10.N.2	–24
16	250	*Measurement*	10.M.2	320 cm^2
17	251	*Number Sense and Operations*	10.N.2	
18	252	*Patterns, Relations, and Algebra*	10.P.1	27
19	252	*Number Sense and Operations*	10.N.3	2.8
20	253	*Geometry*	10.G.9	
21	254	*Patterns, Relations, and Algebra*	10.P.7	
22	255	*Geometry*	10.G.3	C
23	255	*Data Analysis, Statistics, and Probability*	10.D.1	B
24	256	*Patterns, Relations, and Algebra*	10.P.6	A
25	257	*Patterns, Relations, and Algebra*	10.P.2	B
26	257	*Measurement*	10.M.3	A
27	258	*Data Analysis, Statistics, and Probability*	10.D.1	D
28	258	*Geometry*	10.G.11	D
29	259	*Measurement*	10.M.1	D
30	259	*Patterns, Relations, and Algebra*	10.P.6	A
31	260	*Patterns, Relations, and Algebra*	10.P.8	
32	261	*Number Sense and Operations*	8.N.3	C
33	261	*Geometry*	10.G.5	B
34	261	*Data Analysis, Statistics, and Probability*	10.D.1	B
35	262	*Patterns, Relations, and Algebra*	10.P.7	D
36	262	*Measurement*	10.M.1	B
37	263	*Patterns, Relations, and Algebra*	10.P.7	B
38	263	*Data Analysis, Statistics, and Probability*	10.D.1	C
39	264	*Patterns, Relations, and Algebra*	10.P.8	C
40	264	*Measurement*	10.M.1	C
41	265	*Data Analysis, Statistics, and Probability*	10.D.1	
42	266	*Measurement*	10.M.2	

* Answers are provided here for multiple-choice items and short-answer items only. Sample responses and scoring guidelines for open-response items, which are indicated by shaded cells, will be posted to the Department's website later this year.

Question 17 - Score Point 4

a. value of the expression is $\boxed{31}$. Since there are no parentheses or exponents, the order of operations says to multiply and divide first, as seen from left to right. $8 \cdot 15 = 120$, $20 \div 5 = 4$. In the numerator, we must now add $120 + 4$. The numerator is now 124. In the denominator, $6 \div 3 = 2$ and $2 \cdot 2 = 4$, making the denominator 4. $124 \div 4 = 31$.

b. $\dfrac{8 \cdot (15 + 20) \div 5}{6 \div (3 \cdot 2)} = 56$ To solve this, it now becomes $\dfrac{8 \cdot (35) \div 5}{6 \div (6)}$

$\downarrow$

$\dfrac{280 \div 5}{1}$

$\downarrow$

$\dfrac{56}{1} \swarrow 56$

c. $\dfrac{8 \cdot (15 + 20 \div 5)}{6 \div 3 \cdot 2} = 38$

This now becomes $\dfrac{8 \cdot (15 + 4)}{4}$

$\downarrow$

$\dfrac{8 \cdot (19)}{4}$

$\downarrow$

$\dfrac{152}{4}$

$\downarrow$

$\nwarrow 38$
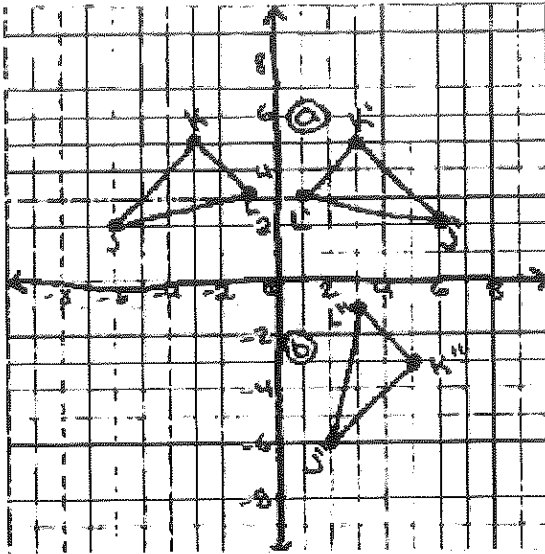
d. $\dfrac{8 \cdot (15 + 20 \div 5)}{6 \div (3 \cdot 2)}$

This becomes $\dfrac{8 \cdot (15 + 4)}{6 \div (6)} = \dfrac{8 \cdot (19)}{1} = \dfrac{152}{1} = 152$

Question 20 – Score Point 4

c. No, the vertices of the resulting triangle do not have the same coordinates as the vertices of triangle JKL. Because $\triangle J'K'L'$ was rotated 90° when $\triangle J'K'L'$ is reflected over the y-axis and then reflected over the x-axis the coordinates would not match up with $\triangle JKL$.

Question 21 – Score Point 4

a. The ratio of Catherine's score to the number of words she typed correctly is 75:200, or 3:8.

b. $\frac{75}{200} = \frac{3}{8}$. $y = \frac{3}{8}x$

c. $y = \frac{3}{8}(240) \rightarrow y = \frac{3}{8} \cdot \frac{240}{1}$ $y = 90$. Catherine scored 90 points. I got this answer by plugging in 240 as the value for x, because x represents the number of words spelt correctly and y represents her score.

d. $90 = \frac{3}{8}x$ $x = \frac{90}{\frac{3}{8}}$ $x = \frac{90}{1} \cdot \frac{8}{3}$ $x = 256$. Catherine must spell at least 256 words correctly to earn a score of 96. I found this answer by plugging in 96 for y, because y represents the score. To find how many words needed to be spelt correctly I needed to isolate x, so I divided 96 by $\frac{3}{8}$. Since I was dividing by a fraction though, I had to flip the fraction so I could multiply by the reciprocal, so I multiplied 96 by $\frac{8}{3}$ in order to find x, how many words she needed to spell correctly.

A. Her company rented 3 vans that day. I got my answer like this: let x = # of vans rented, then make an equation using the information provided. Use the prices of each as coefficients.

$60x + 40(7) = 460$ multiply 40 by 7 to get 280

$60x + 280 = 460$ subtract 280 from 460 to get 180

$60x = 180$ divide 180 by 60 to get the answer

$x = 3$

B. $c + v = 36$

C. $40c + 60v = 1700$

D. $\begin{cases} c + v = 36 \Rightarrow \text{isolate } c \rightarrow c = 36 - v \quad \text{substitute this} \\ 40c + 60v = 1700 \qquad\qquad\qquad\qquad\quad \text{for } c \text{ in the} \\ \qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad \text{other equation} \end{cases}$

$40(36 - v) + 60v = 1700$

$1440 - 40v + 60v = 1700$

$1440 + 20v = 1700$

$20v = 260$

$v = 13$ substitute this back into the other equation to find c.

$c + 13 = 36$

$c = 23$

The company owns 23 cars and 13 vans

Question 41 - Score Point 4

a) Hawks = 14   Wolves = 11 $14 - 11 = 3$ three games

b) panthers. win = 8 played = 20 ratio = $\frac{8}{20}$ = 0.4

ratio = 2:5

c) bears = $\frac{2}{3}$ hawks = $\frac{7}{11}$ cougars = $\frac{1}{2}$ scorpions = $\frac{1}{4}$

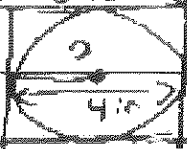panthers = $\frac{2}{5}$ wolves = $\frac{11}{20}$ bears had greatest ratio

d) they would have to play 10 more games to have a 1:2 ratio.

$\frac{5 + (10)}{20 + (10)} = \frac{15}{30} = \frac{1}{2}$

Question 42 - Score Point 4

A. (4 inches)

    Since the box touches the sphere, you double the radius and get 4. The sides are as long as the sphere.

B. volume = (64 inches cubed)

    volume = s^3 s = length of an edge.

      $s^3 = 4^3$ 4·4·4 = 64

    you use the formula which is s^3

    One side equals 4.

C. volume of space = 30.5 inches cubed;

volume of box = 64

volume of sphere = 33.5

   ↳formula = $v = \frac{4}{3} \pi r^3$

       $\frac{4}{3} \pi$

volume of box   64.0

volume of sphere   − 33.5

              30.5

30.5

D. volume of rectangular prism = lwh

    24·20·16 = 7680 inches cubed

•cube box volume = 64

    64)7680 = 120

     (120 boxes)