

MCAS Review

Topic #8: Full Practice Test 4

ANSWER KEY

Grade 10 Mathematics
Spring 2016 Released Items:
Reporting Categories, Standards, and Correct Answers

Item No.	Page No.	Reporting Category ¹	Standard ¹	Correct Answer ² (MC/SA)	2000 Standard ³
1	241	<i>Number and Quantity</i>	8.NS.2	C	10.N.3
2	241	<i>Algebra and Functions</i>	A-APR.1	A	10.P.3
3	241	<i>Statistics and Probability</i>	S-ID.6	B	10.D.2
4	242	<i>Algebra and Functions</i>	A-REI.6	B	10.P.8
5	242	<i>Number and Quantity</i>	7.EE.3	D	10.N.1
6	242	<i>Number and Quantity</i>	7.EE.3	B	10.N.4
7	242	<i>Algebra and Functions</i>	A-CED.3	A	10.P.6
8	243	<i>Number and Quantity</i>	7.NS.3	D	10.N.2
9	243	<i>Geometry</i>	G-GMD.3	A	10.M.3
10	243	<i>Geometry</i>	G-GPE.6	C	10.G.7
11	244	<i>Number and Quantity</i>	7.EE.3	B	10.N.4
12	244	<i>Number and Quantity</i>	7.NS.3	A	10.N.2
13	244	<i>Algebra and Functions</i>	A-SSE.2	A	10.P.4
14	244	<i>Algebra and Functions</i>	F-IF.8	B	10.P.2
15	245	<i>Number and Quantity</i>	N-RN.2	64	10.N.1
16	245	<i>Geometry</i>	G-SRT.8	15 feet	10.G.5
17	246	<i>Algebra and Functions</i>	F-BF.2		10.P.1
18	247	<i>Algebra and Functions</i>	A-REI.4	-5 or 2	10.P.5
19	247	<i>Statistics and Probability</i>	S-ID.1	Any value greater than 40 and less than or equal to 80.	10.D.1
20	248	<i>Geometry</i>	G-SRT.6		10.G.6
21	249	<i>Number and Quantity</i>	8.NS.2		10.N.3
22	250	<i>Geometry</i>	G-CO.2	D	10.G.9
23	250	<i>Algebra and Functions</i>	A-CED.1	B	10.P.7
24	251	<i>Algebra and Functions</i>	F-BF.2	C	10.P.1
25	251	<i>Geometry</i>	G-GMD.3	B	10.M.2
26	251	<i>Statistics and Probability</i>	S-ID.6	D	10.D.1
27	252	<i>Geometry</i>	G-SRT.5	A	10.G.4
28	252	<i>Algebra and Functions</i>	A-REI.6	C	10.P.8
29	252	<i>Statistics and Probability</i>	7.SP.1	A	10.D.3
30	253	<i>Statistics and Probability</i>	6.SP.5	D	10.D.1
31	253	<i>Geometry</i>	7.G.4	A	10.M.1
32	253	<i>Number and Quantity</i>	N-Q.3	C	10.M.4
33	254	<i>Statistics and Probability</i>	S-ID.6	B	10.D.2
34	254	<i>Geometry</i>	G-C.2	A	10.G.3
35	255	<i>Statistics and Probability</i>	S-ID.6	D	10.D.2
36	256	<i>Algebra and Functions</i>	A-CED.3		10.P.8
37	257	<i>Statistics and Probability</i>	S-ID.1	A	10.D.1
38	258	<i>Geometry</i>	G-GMD.3	B	10.M.2
39	258	<i>Number and Quantity</i>	7.NS.3	D	10.N.1
40	258	<i>Algebra and Functions</i>	F-IF.4	B	10.P.7
41	259	<i>Statistics and Probability</i>	S-ID.5		10.D.1
42	260	<i>Geometry</i>	G-GMD.3		10.M.2


¹ The Reporting Category and Standard columns refer to the current (2011) *Massachusetts Curriculum Framework for Mathematics*. More information about reporting categories for Mathematics is available on the Department's website at www.doe.mass.edu/mcas/tdd/math.html?section=testdesign.

² Answers are provided here for multiple-choice and short-answer items only. Sample responses and scoring guidelines for open-response items, which are indicated by the shaded cells, will be posted to the Department's website later this year.

³ The Department is providing the standard from the previous (2000) curriculum framework for Mathematics for reference purposes.

Grade 10 Mathematics
Question 17 - Score Point 4

(a) The common difference for Monelle's sequence is -4 .


$13, 9, 5, 1$ $9 - 13 = -4$ $5 - 9 = -4$ $1 - 5 = -4$


(b) The 6th term is -7 .

$13, 9, 5, 1, -3, -7$ $1 - 4 = -3$ (5th term)


 $-3 - 4 = -7$ (6th term)

(c) The 6th term is $\frac{2}{3}$.

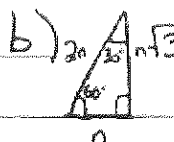
$162, 54, 18, 6, ?, ?$ $6 \div 3 = 2$ (5th term)


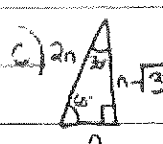
 $2 \div 3 = \frac{2}{3}$ (6th term)

(d) $a_n = 162 \left(\frac{1}{3}\right)^{n-1}$

Grade 10 Mathematics
Question 20 - Score Point 4

a) Perimeter = side₁ + side₂ + side₃ + side₄
 $= 8 + 8 + 8 + 8 = 32 \text{ cm}$

b)  $8 \text{ cm} = 2n$
 $n = 4$ $\overline{AC} = 2n = 2(4) = 8 \text{ cm}$

c)  $n = 4$ $\overline{BD} = 2(n\sqrt{3}) = 2(4\sqrt{3}) = 8\sqrt{3} \text{ cm}$

d) Area = $\frac{\text{Diagonal}_1 \times \text{Diagonal}_2}{2}$

$= \frac{(8 \text{ cm})(8\sqrt{3} \text{ cm})}{2}$

$= \frac{64\sqrt{3}}{2} = 32\sqrt{3} \text{ cm}^2$

Grade 10 Mathematics
Question 21 - Score Point 4

a. $3^2 = 9$ $\sqrt{15}$ is between 3 and 4.
 $4^2 = 16$ Since 15 is closer to 16, $\sqrt{15}$
is approximately 4.

b. $3^3 = 27$ $\sqrt[3]{30}$ is between 3 and 4.
 $4^3 = 64$ Since 30 is closer to 27, $\sqrt[3]{30}$ is
approximately 3.

c. The approximation that William found was 5.9, because
 5.9×5.9 is 34.81. Since Vivian's approximation was 5.8,
and $5.8 \times 5.8 = 33.64$, William's number is closer to 35.

d. $10 \times 10 = 100$ $10.1 \times 10.1 = 102.01$
 $100 \times 10 = 1000$ $102.01 \times 10.1 = 1030.201$

Vivian's was closer because
1000 is only 10 units away
from 1010, while William's number
1.030 is 20 units away.

Grade 10 Mathematics

Question 36 - Score Point 4

a) $10n = 110$

$n = 11$ - 11\$ for each box of nails.

b) $6x + 40y = 554$ } because $609 - 55 = 554$
 $8x + 20y = 472$ } and $527 - 55 = 472$

c) $6x + 40y = 554$
 $2(8x + 20y = 472)$

$16x + 40y = 944$

$6x + 40y = 554$

$10x = 390$

$x = 39$

$6(39) + 40y = 554$

$234 + 40y = 554$

$\frac{40y = 320}{40 \quad 40}$

$y = 8$

It cost \$39 for a

sheet of plywood and \$8 for the trim board.

d) $5 \times 8 = 40$

$200 - 40 = 160$

$160 / 39 = 4.102$

The assistant could order

a maximum of

4 sheets of plywood

given she has already

bought 5 trim boards.

Grade 10 Mathematics

Question 41 - Score Point 4

a) Brown hair: $10 + 6 + 3 + 1 = \underline{20 \text{ students.}}$

20 students in the chorus have brown hair although they have different eye colors. Of all the brown hair students, 10 have brown eyes, 6 blue, 3 green, and 1 hazel, and together, they add up to 20 students.

b) Total blond hair = $3 + 6 + 3 + 2 = 14$ students

students hazel eyes = 2 students

2 out of 14 students with blond hair have hazel eyes thus the fraction is $\frac{2}{14}$ which equals $\frac{1}{7}$ of the students.

c) # students green eyes AND red hair = 3

Total # of students = 60

3 out of 60 students have both green eyes and red hair which is $\frac{3}{60} = .05$, which is equivalent to $\underline{5\%}$ of all the students.

d) # students green eyes OR red hair = $4 + 3 + 3 - 3 + 2 + 2 + 2 = 19$

Total # of students = 60

19 out of 60 students have green eyes or red hair, which is $\frac{19}{60} = .31667$ which is equivalent to $\underline{31.667\%}$ of all the students.

Grade 10 Mathematics

Question 42 - Score Point 4

a.) $V = s^3$

$V = 3^3$

$V = 27 \text{ in}^3$

b.) $V = \frac{1}{3} s^2 h$

$V = \frac{1}{3} (3^2)(1.5)$

$V = \frac{1}{3} (13.5)$

$V = 4.5 \text{ in}^3$

c.) $SA = 6s^2$

$SA = 6(3^2)$

$SA = 6(9)$

$SA = 54 \text{ in}^2$

d.) $SA = s^2 + 2sl$

$SA = 9 + 2(3)(1.5\sqrt{2})$

$SA \approx \text{about } 22 \text{ in}^2$