

Sample Documents

Mid-level Math Assessment (MMA)

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9th Grade Placement Exam

Name _____

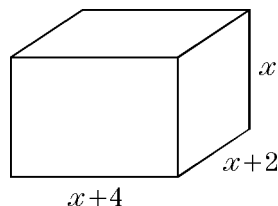
Date _____

Instructions: Darken the bubble corresponding to the correct answer. You will have 50 minutes to complete the test. If you finish before time is called, go back and check your answers.

1. What decimal is represented by the phrase “twenty-nine and thirty-one thousandths”?
 (a) 29.00031 (b) 29.0031 (c) 29.031
 (d) 29.31 (e) 29.311
2. What decimal is represented by the phrase “five and four hundred thirty-six thousandths”?
 (a) 5.036 (b) 5.43 (c) 5.0436
 (d) 5.436 (e) 54.36
3. Simplify $(3.2 \times 10^6)(2.6 \times 10^4)$, and write your answer in scientific notation.
 (a) 8.32×10^8 (b) 0.832×10^9
 (c) 8.32×10^{10} (d) 8.32×10^{11}
 (e) 832×10^8
4. Simplify $(7.5 \times 10^{-9})(9 \times 10^{-7})$, and write your answer in scientific notation.
 (a) 6.75×10^{-16} (b) 6.75×10^{-15}
 (c) 67.5×10^{-14} (d) 675×10^{-13}
 (e) 6.75×10^{-14}
5. If $x < y$, then which of the following is always true?
 (a) $xy > 0$ (b) $x^2 < y^2$ (c) $x - y < 0$
 (d) $x^2 > y^2$ (e) $3x < 2y$
6. If $a > b$, then which one is always true?
 (a) $a - b < 0$ (b) $a^2 > b^2$ (c) $a^2 < b^2$
 (d) $ab > 0$ (e) $3a > 3b$
7. Evaluate $(11z + 6)(z - 3)$ for $z = 4$.
 (a) -35 (b) 21 (c) 50
 (d) 70 (e) 350
8. Evaluate $(4p - 10)(p + 2)$ for $p = 5$.
 (a) -35 (b) -10 (c) 14
 (d) 38 (e) 70
9. Which of the following are factors of $h^3 + 125$?
 I. $h - 5$
 II. $h + 5$
 III. $h^2 - 5h + 25$
 IV. $h^2 + 5h + 25$
 (a) I and II only (b) I and III only
 (c) II and III only (d) II and IV only
 (e) III and IV only
10. Which of the following are factors of $4g^2 - 9h^2$?
 I. $2g - 3h$
 II. $2g + 3h$
 III. $4g - 9h$
 IV. $g + h$
 (a) I and II only (b) I and III only
 (c) I and IV only (d) II and III only
 (e) III and IV only

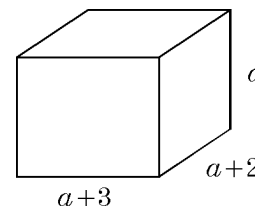
11. Find the expression that would represent the volume of the rectangular solid.

- (a) $x^3 + 8x$
 (b) $x^3 + 6x^2 + 8x$
 (c) $5x^2 + 18x + 8$
 (d) $x^2 + 6x + 8$
 (e) $3x + 6$



12. Find the expression that would represent the volume of the rectangular solid.

- (a) $a^3 + 5a$
 (b) $2a^2 + 5a + 6$
 (c) $a^2 + 6a + 6$
 (d) $a^3 + 5a^2 + 6a$
 (e) $6a^2 + 20a + 12$



13. Given $(3x + 5)(2x - 1) = x(6x + 1) - 16$, what is the value of $2x$?

- (a) $-\frac{17}{2}$ (b) -6 (c) $-\frac{11}{3}$
 (d) $\frac{7}{3}$ (e) 12

14. Given $(4t + 1)(2t - 6) = t(8t + 2) - 18$, what is the value of $4t$?

- (a) $\frac{1}{2}$ (b) 1 (c) 2 (d) 4 (e) 8

15. Solve the equation $\frac{1}{x-1} + \frac{1}{2} = \frac{2}{x^2-1}$.

- (a) -5 (b) -3 (c) -5 or 2
 (d) -3 or 1 (e) 0 or 1

16. Solve the equation $\frac{8}{x^2-16} + \frac{3}{4} = \frac{1}{x-4}$.

- (a) $-\frac{8}{3}$ or 4 (b) -4 or $-\frac{8}{3}$ (c) -14 or $\frac{1}{4}$
 (d) $-\frac{16}{3}$ (e) $-\frac{8}{3}$

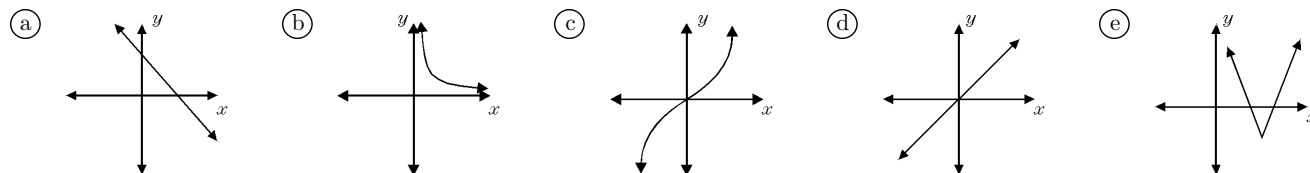
17. The current I in an electrical conductor varies inversely as the resistance R of the conductor. If the current is $\frac{1}{2}$ ampere when the resistance is 240 ohms, what is the current when the resistance is 540 ohms?

- (a) $\frac{1}{10}$ amperes (b) $\frac{2}{9}$ amperes
 (c) $\frac{1}{2}$ amperes (d) $\frac{2}{3}$ amperes
 (e) $\frac{3}{4}$ amperes

18. The volume V of a gas varies inversely as the pressure P upon it. The volume of a gas is 200 cm^3 under pressure of 32 kg/cm^2 . What will be its volume under a pressure of 40 kg/cm^2 ?

- (a) 138 cm^3 (b) 144 cm^3 (c) 154 cm^3
 (d) 160 cm^3 (e) 172 cm^3

19. Which of the following graphs represent an inverse variation?



Answer List

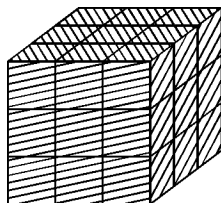
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|-------|-------|-------|
| 1. c | 2. d | 3. c |
| 4. b | 5. c | 6. e |
| 7. c | 8. e | 9. c |
| 10. a | 11. b | 12. d |
| 13. c | 14. c | 15. b |
| 16. e | 17. b | 18. d |
| 19. b | | |
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Catalog List

- | | | |
|---------------|---------------|---------------|
| 1. MMA BA 7 | 2. MMA BA 10 | 3. MMA BD 61 |
| 4. MMA BD 64 | 5. MMA EA 35 | 6. MMA EA 37 |
| 7. MMA FA 13 | 8. MMA FA 14 | 9. MMA GC 65 |
| 10. MMA GC 42 | 11. MMA HD 37 | 12. MMA HD 38 |
| 13. MMA IA 51 | 14. MMA IA 52 | 15. MMA ID 49 |
| 16. MMA ID 50 | 17. MMA IJ 33 | 18. MMA IJ 34 |
| 19. MMA IJ 6 | | |

1. The given cube is cut into 27 smaller cubes. Suppose you paint the outside of the large cube gray, then put all the small cubes into a bag. If you pick one of the small cubes at random, what is the probability that it will have exactly one gray side?

- A. $\frac{1}{9}$ B. $\frac{2}{9}$ C. $\frac{1}{3}$
D. $\frac{1}{2}$ E. $\frac{7}{8}$



2. The highest elevation of any point on earth is Mt. Everest, which is 29,028 ft above sea level. The Dead Sea is the lowest at 1,290 ft below sea level. What is the difference in elevations between these two locations?

- A. 2,250 ft B. 18,267 ft C. 27,738 ft
D. 30,318 ft E. 41,928 ft

3. Of D dogs in Mrs. Pace's kennel, $\frac{1}{3}$ are classified as large dogs and $\frac{1}{4}$ of the remainder are classified as medium-sized. How many of the dogs are classified as small?

- A. $\frac{1}{6} \cdot D$ B. $\frac{1}{3} \cdot D$ C. $\frac{1}{2} \cdot D$
D. $\frac{2}{3} \cdot D$ E. $\frac{5}{6} \cdot D$

4. The distance from the Sun to the Earth is 1.496×10^8 kilometers. About how long does it take light to travel from the Earth to the Sun if the speed of light is 3×10^5 kilometers per second? (Use the formula $d = rt$ solved for time.)

- A. 5 seconds B. 20 seconds
C. 50 seconds D. 200 seconds
E. 500 seconds

5. Three out of four dentists recommend brand X toothpaste. In a group of 460 dentists, how many would *not* recommend brand X?

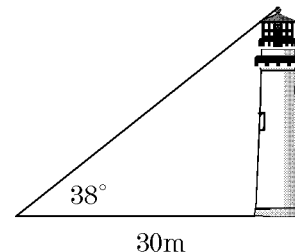
- A. 115 B. 298 C. 345 D. 510 E. 613

6. A local library bought 54 books. Some cost \$32 each and some cost \$44 each. The total cost of the books was \$1,968. How many of the \$32 books were purchased?

- A. 34 B. 38 C. 41 D. 45 E. 49

7. In the given diagram, find the height of the light house to the nearest tenth.

- A. 20.3 m
B. 23.4 m
C. 25.9 m
D. 28.7 m
E. 31.2 m



8. Orlando can do a job in 4 days. When Orlando and Maggie work together, the job takes $2\frac{1}{3}$ days. How long would the job take Maggie working alone?

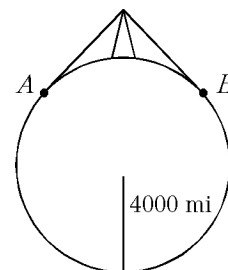
- A. $5\frac{3}{5}$ days B. $5\frac{3}{4}$ days C. $6\frac{2}{3}$ days
D. $6\frac{7}{8}$ days E. $7\frac{1}{6}$ days

9. A projectile launched from the ground travels 3.2 miles in a straight path and reaches a height of 0.5 miles. Find the angle that the path of the projectile makes with the ground to the nearest degree.

- A. 5° B. 9° C. 12° D. 15° E. 18°

10. Suppose a radio tower is 800 feet tall. Assuming that the diameter of the earth is 8,000 miles, how far is it from the top of the tower to the horizon point A or B ? (Find your answer to the nearest tenth of a mile.)

- A. 28.3 mi B. 30.8 mi
C. 34.8 mi D. 38.4 mi
E. 43.8 mi



Answer List

- | | | |
|-------|------|------|
| 1. B | 2. D | 3. C |
| 4. E | 5. A | 6. A |
| 7. B | 8. A | 9. B |
| 10. C | | |
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Catalog List

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|---------------|--------------|--------------|
| 1. MMA EE 75 | 2. MMA AG 12 | 3. MMA BK 49 |
| 4. MMA CH 40 | 5. MMA DF 52 | 6. MMA IK 67 |
| 7. MMA LL 10 | 8. MMA IK 83 | 9. MMA LL 20 |
| 10. MMA NE 14 | | |

Introductory Algebra

Final Review

Name _____

Date _____

1. Find the quotient and remainder when 653 is divided by 9.

1. (a) (b) (c) (d) (e)

- a. 72 r1 b. 72 r5 c. 73 r3 d. 73 r5 e. 74 r8

2. A grocer sold k pounds of butter for b cents. In terms of k and b , find number of cents the grocer received for selling x pounds of butter.

2. (a) (b) (c) (d) (e)

- a. $\frac{kx}{b}$ cents b. $\frac{k}{bx}$ cents c. $\frac{ka}{x}$ cents d. $\frac{k}{bx}$ cents e. $\frac{bx}{k}$ cents

3. Find the next three items in the pattern 1, 1, 2, 3, 5, 8.

3. (a) (b) (c) (d) (e)

- a. 9, 17, 26 b. 10, 18, 28 c. 13, 21, 34 d. 14, 22, 36 e. 16, 24, 40

4. Find the solution to $\sqrt{m} + 7 = 4$.

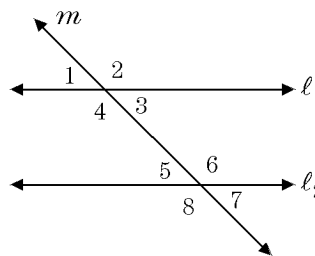
4. (a) (b) (c) (d) (e)

- a. -3 b. 3 c. 9
d. 11 e. no solution

5. In the diagram, if ℓ_1 and ℓ_2 are parallel, which of the following must be true?

5. (a) (b) (c) (d) (e)

- a. $\angle 1 \cong \angle 6$ b. $\angle 1 \cong \angle 8$ c. $\angle 2 \cong \angle 3$
d. $\angle 2 \cong \angle 5$ e. $\angle 3 \cong \angle 5$



6. The perimeter of an equiangular triangle is 31 cm. Find the length of each side.

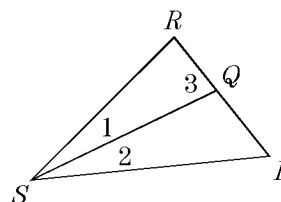
6. (a) (b) (c) (d) (e)

- a. $10\frac{1}{3}$ cm b. $11\frac{1}{4}$ cm c. 15 cm d. $22\frac{1}{2}$ cm e. 45 cm

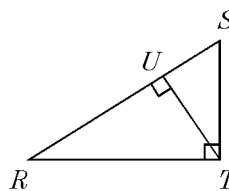
7. Given the following diagram with \overline{SQ} bisecting $\angle PSR$, which inequality is true?

7. (a) (b) (c) (d) (e)

- a. $RS > RQ$ b. $QR > PQ$ c. $SR < SQ$
d. $SP > QP$ e. $SR < SP$



8. Given the figure with $\angle RTS$ a right angle, and \overline{TU} is an altitude. If $RS = 25$ and $SU = 5$, find the value of TS .



8. (a) (b) (c) (d) (e)

- a. $\sqrt{5}$ b. 5 c. $5\sqrt{5}$ d. 10 e. $12\sqrt{2}$

9. Find the area of a triangle with base 6 and altitude 12.

9. (a) (b) (c) (d) (e)

- a. 12 b. 18 c. 36 d. 40 e. 72

10. Which diagram is 25% shaded?

10. (a) (b) (c) (d) (e)



11. The volume of a cube with edges $\sqrt{4}$ is how many times the volume of a cube with edge $\sqrt[4]{4}$?

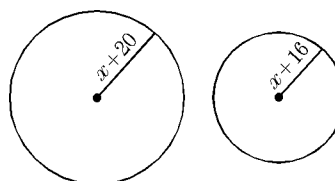
11. (a) (b) (c) (d) (e)

- a. 1 b. $\sqrt{2}$ c. 2 d. $\sqrt[4]{4}$ e. 4

12. In the figure, find the difference between the circumference of the larger circle and the circumference of the smaller circle?

12. (a) (b) (c) (d) (e)

- a. 3π b. 4π c. 8π
d. $x + 4\pi$ e. $2x + 3\pi$



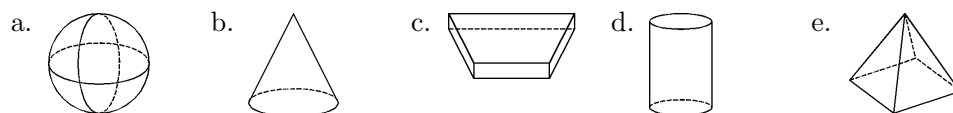
13. Find the x -intercept of the line $7x - 4y + 18 = 0$.

13. (a) (b) (c) (d) (e)

- a. $-\frac{18}{7}$ b. $-\frac{9}{2}$ c. $\frac{2}{9}$ d. $\frac{9}{2}$ e. $\frac{18}{7}$

14. Which of the following is a pyramid?

14. (a) (b) (c) (d) (e)



15. A square has vertices at $(0,0)$ and $(8,8)$. Find the perimeter of the square.

15. (a) (b) (c) (d) (e)

- a. 8 b. 16 c. 24 d. 32 e. 64

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Introductory Algebra Final Review Ms. Francis 5/8/98

Answer List

- | | | |
|-------|-------|-------|
| 1. b | 2. e | 3. c |
| 4. e | 5. e | 6. a |
| 7. a | 8. c | 9. c |
| 10. b | 11. c | 12. c |
| 13. a | 14. e | 15. d |
-

Catalog List

- | | | |
|---------------|---------------|---------------|
| 1. MMA AC 35 | 2. MMA DE 35 | 3. MMA EB 17 |
| 4. MMA JD 18 | 5. MMA KF 27 | 6. MMA LF 7 |
| 7. MMA LH 16 | 8. MMA MD 58 | 9. MMA MG 6 |
| 10. MMA BH 12 | 11. MMA OC 20 | 12. MMA HD 31 |
| 13. MMA PF 14 | 14. MMA OA 5 | 15. MMA PB 26 |