ARITHMETIC

Suggested time – 40 minutes
35 Questions

Directions: In this section solve each problem. Then decide which is the best of the choices given.

1. What is 7:2589 rounded to the nearest hundredth?

(A) 7:26 (B) 7:3 (C) 7:2 (D) 7:25

2. $\frac{52}{78}$ =

(A) $\frac{3}{4}$ (B) $\frac{8}{9}$ (C) $\frac{2}{3}$ (D) $\frac{5}{6}$

3. 1:37 + 9:2 + 5:001 =

(A) 5:23 (B) 6:13 (C) 52:3 (D) 15:571

4. 2:53 3:1 is between

(A) 4 and 6 (B) 6 and 8 (C) 60 and 80 (D) 600 and 800

5. $\frac{3}{4}$ of 48 is

(A) 16 (B) 36 (C) 38 (D) 64

6. 35:2 3:31 =

(A) 31:89 (B) 32:01 (C) 31:98 (D) 32:13

7. Beth makes fruit punch by adding 3 cups of fruit juice to every 5 liters of soda. If she uses 15 liters of soda, how many cups of juice should she use?

(A) 9 (B) 12 (C) 13 (D) 25

8. $\frac{5:7}{0:028}$ is closest to

(A) 2 (B) 20 (C) 200 (D) 2000

9. $\frac{3}{8} + \frac{1}{4}$ =

(A) $\frac{1}{2}$ (B) $\frac{5}{8}$ (C) $\frac{4}{8}$ (D) $\frac{1}{3}$

10. If the average of 5 numbers is 50, what is their sum?

(A) 10 (B) 25 (C) 55 (D) 250

11. $\frac{5}{11} \quad \frac{3}{7}$ =

(A) $\frac{1}{11}$ (B) $\frac{35}{33}$ (C) $\frac{1}{2}$ (D) $\frac{33}{35}$

12. $1\frac{2}{3} \quad 2\frac{3}{8}$ =

(A) $3\frac{23}{24}$ (B) $4\frac{1}{24}$ (C) $2\frac{1}{4}$ (D) $\frac{40}{57}$

13. $\frac{7}{20}$ =

(A) 0:305 (B) 0:35 (C) 2:86 (D) 13

14. $\frac{3}{4}$ $\frac{1}{6}$ =

(A) 1 (B) $\frac{2}{24}$ (C) $\frac{2}{3}$ (D) $\frac{7}{12}$

15. If 10 percent of a number is 40, then 25 percent of that number is

(A) 4 (B) 10 (C) 16 (D) 100

16. A clock that gains 20 seconds every hour will gain how many minutes in a day?

(A) 4 (B) 8 (C) 16 (D) 32

17. 3 $\frac{5}{6}$ =

(A) $\frac{18}{5}$ (B) $\frac{5}{2}$ (C) $\frac{2}{5}$ (D) $\frac{5}{18}$

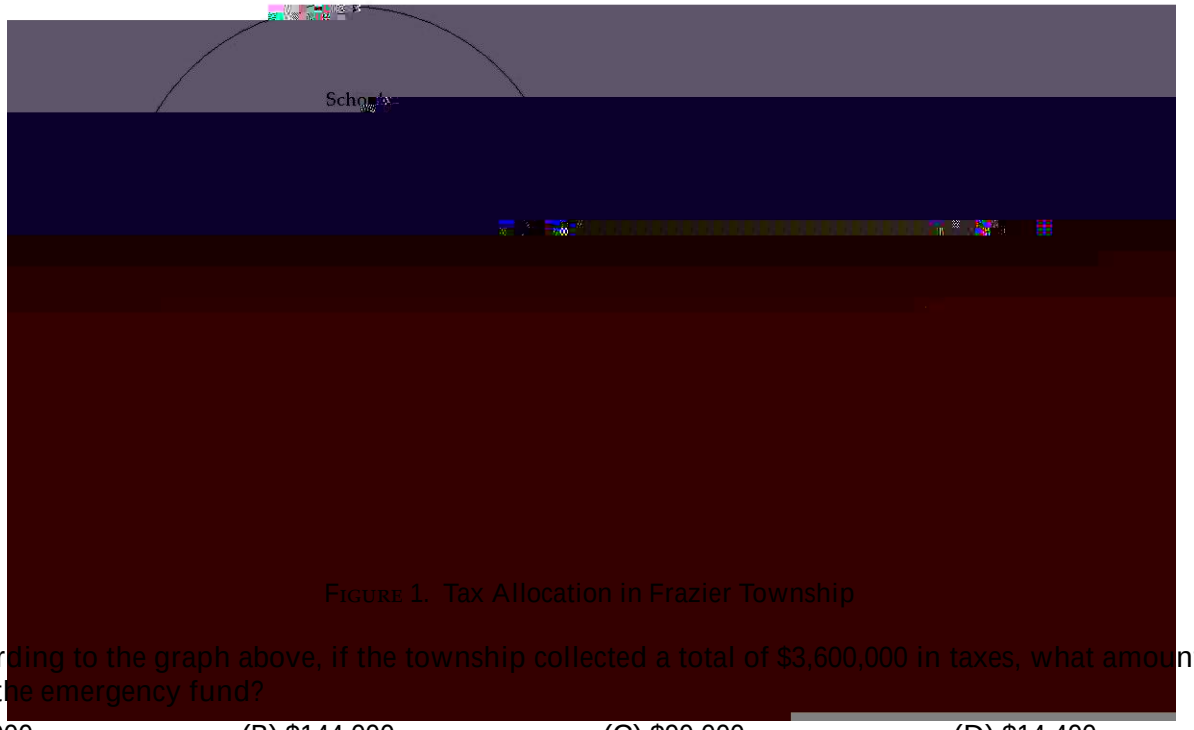


FIGURE 1. Tax Allocation in Frazier Township

18. According to the graph above, if the township collected a total of $3,600,000 in taxes, what amount was set aside for the emergency fund?

(A) $900,000 (B) $144,000 (C) $90,000 (D) $14,400

19. 58; 602 5 =

(A) $1172\frac{2}{5}$ (B) $1172\frac{3}{5}$ (C) $11720\frac{2}{5}$ (D) $11720\frac{4}{5}$

20. If eight furlongs measures 320 rods, how many furlongs are in a measure of 600 rods?

(A) 16 (B) 20 (C) 15 (D) 40

A theater was sold out for 85 percent of its performances last season. Once the theater was sold out for 15 performances in a row.

21. From the information above, which of the following can be determined?

(A) The total number of performances last season that were sold out.
(B) The number of performances last season that were not sold out.
(C) The percent of the performances last season that were not sold out.
(D) The percent of the performances sold out in a row.

22. Three people who work full time are to work together on a project, but their total time in the project is to be equivalent to that of only one person working full time. If one of the people is budgeted for $\frac{1}{3}$ of his time to the project and a second person $\frac{1}{4}$ of her time, what part of the third worker's time should be budgeted to this project?

(A) $\frac{1}{12}$ (B) $\frac{5}{12}$ (C) $\frac{4}{7}$ (D) $\frac{3}{4}$

23. 12.5 percent of 402 is closest to

(A) 35 (B) 40 (C) 50 (D) 480

24. 5:905 100:04 is closest to

(A) 500 (B) 600 (C) 5; 000 (D) 6; 000

25. In year *X* the population of a certain city was reported to be 503,200, which represented 82 percent of the state's population. According to these figures, what was the approximate population of the state in year *X*?

(A) 410; 000 (B) 510; 000 (C) 610; 000 (D) 790; 000

26. Which of the following is greater than 0:30 and less than 0:50?

(A) $\frac{1}{8}$ (B) $\frac{2}{5}$ (C) $\frac{3}{5}$ (D) $\frac{4}{5}$

27. How many fifths are there in 2.8?

(A) 140 (B) 14 (C) 5:6 (D) 0:56

28. If $\frac{N}{10}$ equals 0:41, then *N* is approximately

(A) 41 (B) 4 (C) 5 (D) 0:6

29. If 1 *pik* = 10 *jums* and 1 *dim* = 25 *jums*, what is the ratio of the value of 5 *piks* to 4 *dims*?

(A) 1 : 2 (B) 2 : 5 (C) 5 : 2 (D) 5 : 4

30. On two tests, a student scored 85 and 92, respectively. What score must the student ac91 Tf 21.218 0 Td [(?)]TJ 07

31. Which of the following is closest to $\sqrt{4000}$?

(A) 20 (B) 60 (C) 400 (D) 2000

32. A rectangular recreation area 20 meters long and 15 meters wide is to be marked o by putting a rope around

ELEMENTARY ALGEBRA

Suggested time – 40 minutes
35 Questions

Directions: In this section solve each problem. Then decide which is the best of the choices given.

1. Which of the following is greater than 6?

(A) 7 (B) 6:3 (C) 2 (D) 9

2. $5(x + 3) =$

(A) $5x + 3$ (B) $5x + 15$ (C) $5x + 8$ (D) $x + 15$

3. $\frac{21 \quad (\ 7)}{7} =$

(A) 2 (B) 4 (C) 10 (D) 22

4. $12x \quad 16y \quad 5x + y =$

(A) $7x^2 \quad 15y^2$ (B) $17x \quad 17y$ (C) $7x \quad 15y$ (D) $7 \quad 15y$

5. $8 \quad \frac{1}{8}$

(A) 1 (B) 0 (C) $\frac{7}{8}$ (D) $7\frac{7}{8}$

6. If $c = \ 3$, then $4c^2 + 5c \quad 2 =$

(A) 53 (B) 7 (C) 19 (D) 127

7. Which of the following numbers is least?

(A) $\frac{1}{4}$ (B) 1 (C) 0 (D) 4

8. $\sqrt{36x^6} =$

(A) $18x^4$ (B) $18x^3$ (C) $6x^4$ (D) $6x^3$

9. If $2x \quad 5 = \ 7$, then $x =$

(A) 1 (B) 1 (C) 6 (D) 6

10. $(2x \quad 3)(2x + 3) =$

(A) $2x^2 \quad 9$ (B) $4x^2 \quad 9$ (C) $4x^2 + 9$ (D) $4x^2 \quad 6x \quad 9$

11. $\frac{15x^2}{3x}$

(A) $5x$ (B) $5x^2$ (C) $12x$ (D) $\frac{5}{x}$

12. $(2x^2y)^3$

(A) $6x^6y^3$ (B) $8x^5y^3$ (C) $8x^6y^3$ (D) $9x^6y^3$

13. On Monday, Dave drove exactly m miles. On Tuesday, he drove 112 fewer miles than he drove on Monday. Which of the following expressions represents the total number of miles Dave drove on both days?

(A) m 112 (B) 112 m (C) 112 2m

22. All the following points are on the graph of $y = 3x + 1$, EXCEPT

(A) (2; 5) (B) (1; 4) (C) (0; 1) (D) (2; 6)

23. $\frac{2s}{5r} \quad \frac{10r}{6s^2} =$

(A) $6rs$ (B) $\frac{2r}{3s}$ (C) $\frac{2}{3s}$ (D) $\frac{12s^3}{50r^2}$

$$\begin{cases} x + 2y = 15 \\ x \quad y = 3 \end{cases}$$

24. For the system of equations above, what is the value of x?

(A) 4 (B) 6 (C) 7 (D) 9

25. Given $x =$ j5j + j6j; $y =$ j 5 + 6j; and $z =$ j 5j + j6j, which one of the following is true about the numbers x, y, and z?

(A) $x = y$ (B) $y = z$ (C) $x = y = z$ (D) $x < y$

26. Which of the following is a factor of $x^2 \quad 5x \quad 6$?

(A) $x \quad 2$ (B) $x \quad 3$ (C) $x \quad 6$ (D) $x \quad 1$

27. The equation $\frac{N}{2} \quad 1 = 5$ could be used to represent which of the following sentences?

(A) 1 less than half a number N equals 5.
(B) Half a number N less than 1 equals 5.
(C) A number N minus 1 divided by 2 equals 5.
(D) Two times a number N minus 1 equals 5.

28. If 8 is $\frac{3}{4}$ of a number N, then $N =$

(A) 6 (B) 32 (C) $\frac{32}{3}$ (D) 24

29. If $2x \quad y = 12$, and $x = 2y$, then $x =$

(A) 4 (B) 8 (C) 16 (D) 0

30. Kim earns x dollars per hour for the first 40 hours she works in a week and $1\frac{1}{2}$ times as much for each hour over 40. If she worked 52 hours last week, how much, in dollars, did she earn?

(A) $52x$ (B) $40 + 1\frac{1}{2}x$ (C) $52x + 1\frac{1}{2}x$ (D) $58x$

31. Which of the following is a factor of $3a^2 \quad 17a + 20$?

(A) $3a \quad 20$ (B) $a \quad 4$ (C) $a + 4$ (D) $3a + 5$

32. $\dfrac{10}{3 + \frac{2}{x}} =$

(A) $2x$ (B) $\dfrac{10}{3x + 2}$ (C) $\dfrac{10x}{3x + 2}$ (D) $\dfrac{10}{3} + \dfrac{2}{x}$

(A)2927 4Tq1 0 0 1 64.058 659.716 cm[056 d 0 1 0.644 w 0 2092 3.455 8 Tf [(150 0 7 34)785 4 F 67 0 0 9 21 Tf [(4540 T d [(x

COLLEGE LEVEL MATHEMATICS

Suggested time – 50 minutes
35 Questions

Directions: In this section solve each problem. Then decide which is the best of the choices given.

1. $2x^2 \quad 10x + 12 =$

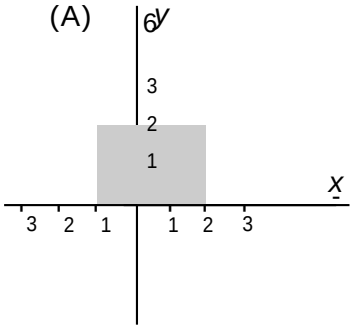
(A) $(2x \quad 3)(x \quad 4)$ (B) $[2(x \quad 3)]^2$ (C) $2(x \quad 2)(x \quad 3)$ (D) $2(x + 6)(x \quad 1)$ (E) $2(x \quad 5)(x \quad 1)$

2. Where defined, $\dfrac{18x^3y^8z}{6x^2y^4z} =$

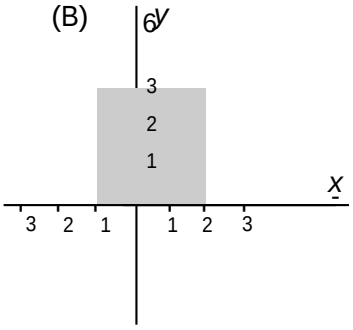
(A) $3xy^4$ (B) $3xy^2$ (C) $\dfrac{xy^4}{3}$ (D) $\dfrac{1}{3xy^2}$ (E) $\dfrac{y^4}{3x}$

3. Which of the following shaded regions is the graph of the region described by $1 \quad x \quad 2$ and $0 \quad y \quad 3$?

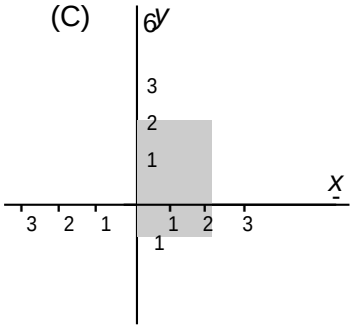
(A)



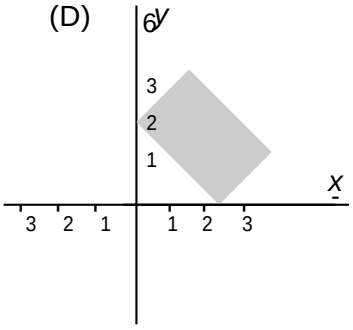
(B)



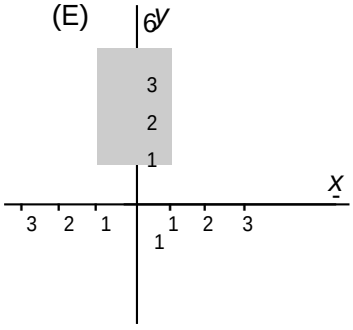
(C)

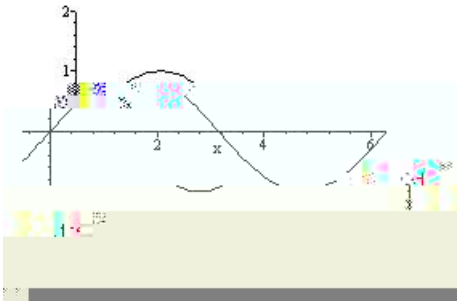


(D)



(E)





4.

12. If $\sin 50^\circ = x$, then which one of the following is true?

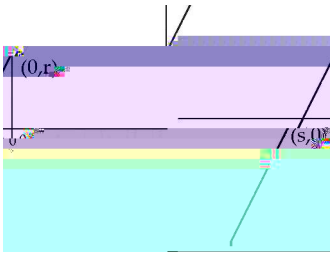
(A) $0 < x < \frac{1}{2}$

(B) $\frac{1}{2} < x < \frac{\sqrt{2}}{2}$

(C) $\frac{\sqrt{2}}{2} < x < \frac{\sqrt{3}}{2}$

(D) $\frac{\sqrt{3}}{2} < x < 1$

(E) $1 < x < \frac{3}{2}$



13.

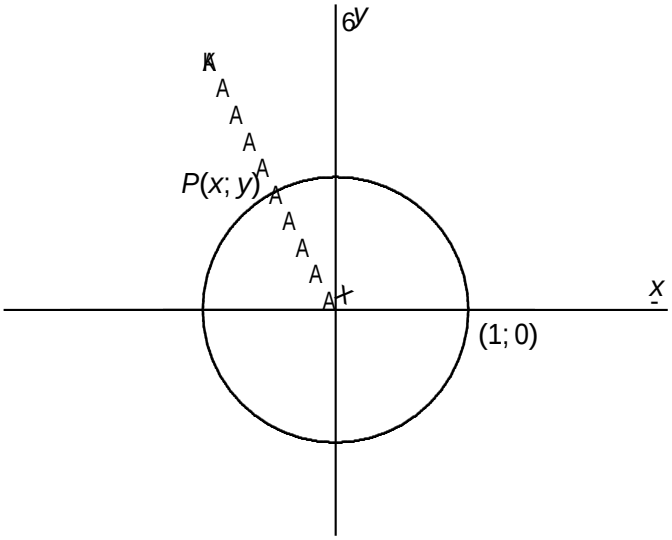
(A) 3^5 (B) 5^3 (C) 15 (D) $\frac{5}{3}$ (E) $\frac{3}{5}$

18. What is the amplitude of $y = 5\sin 4x$

(A) 4 (B) $\frac{}{4}$ (C) $\frac{5}{4}$ (D) 5 (E) 5

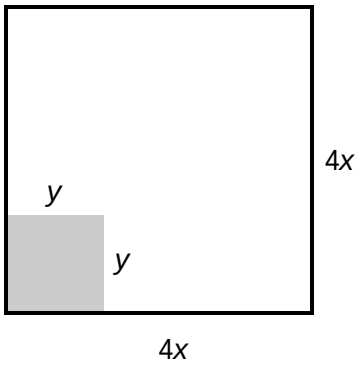
19. If $f(x) = 4x + 3$ and $g(x) = \frac{x \quad 3}{4}$, then $f(g(x)) =$

(A) x (B) $\frac{x \quad 3}{8x + 4}$ (C) $\frac{8x + 2}{x \quad 3}$ (D) $\frac{17x + 9}{4}$ (E) $\frac{(4x + 3)(x \quad 3)}{4}$



20. In the figure above, if the coordinates of point P on the unit circle are $(x; y)$, then sin =

(A) $\frac{x}{y}$ (B) $\frac{1}{y}$ (C) x (D) y (E) $\frac{1}{x}$



21. In the square in the figure above, the area of the unshaded region is

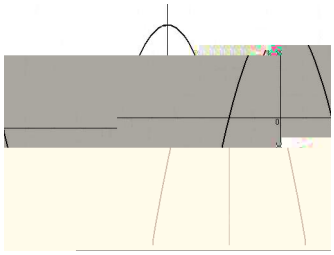
(A) $(4x \quad y)(4x \quad y)$ (B) $16x^2 + y^2$ (C) $4x(4x \quad y) \quad y(4x + y)$ (D) $4x(4x + y) + y(4x + y)$ (E) $(4x + y)(4x \quad y)$

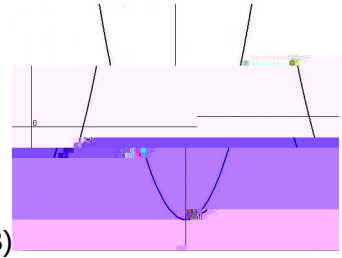
$$\begin{cases} y = x + 2 \\ y = x^2 \end{cases}$$

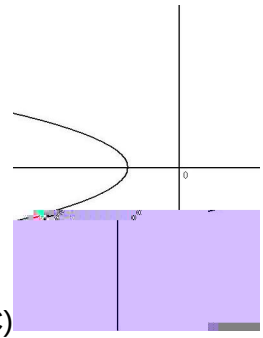
22. What values of x satisfy the system of equations above?

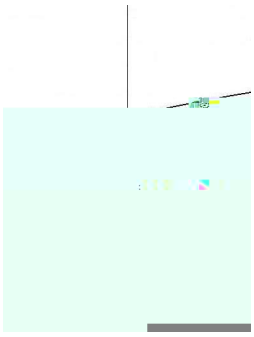
(A) 1 and 2 (B) 2 and 2 (C) 2 and 1 (D) 4 and 1 (E) 4 and 2

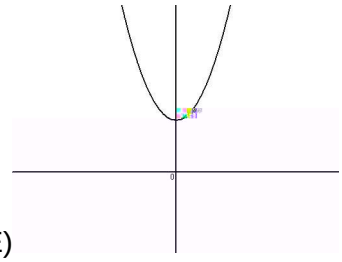
23. Which one of the following could represent the graph of $y = x^2 + c$?

(A) 

(B) 

(C) 

(D) 

(E) 

24. $\csc \frac{}{3} =$

(A) 2 (B) $\frac{\sqrt{3}}{2}$ (C) $\frac{2}{\sqrt{2}}$ (D) $\frac{2}{\sqrt{3}}$ (E) $\frac{\sqrt{2}}{2}$

25. If $f(x) = 3x^2 \quad 4$, then $f(\ x) =$

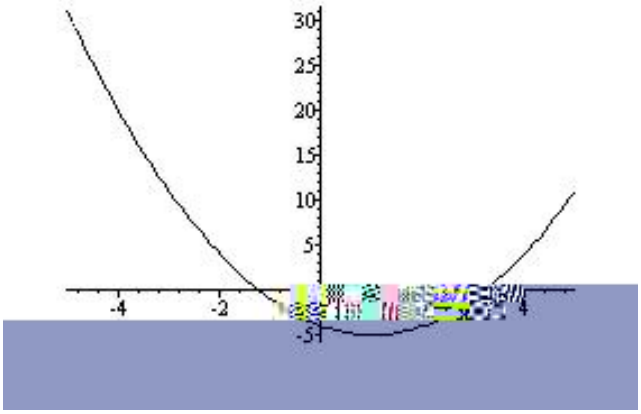
(A) $f(x \quad 1)$ (B) $f(x)$ (C) 0 (D) $f(x)$ (E) $f(x + 1)$

26. $\sum_{n=4}^{} n =$

(A) 7 (B) 10 (C) 60 (D) 66 (E) $\frac{11!}{4!}$

27. $8(2^{\frac{3}{2}})(4^{\frac{3}{4}}) =$

(A) $2^{\frac{4}{9}}$ (B) 2^6 (C) $2^{\frac{27}{4}}$ (D) 2^7 (E) 2^9



28. Which of the following could be an equation of the graph shown in the figure above?

(A) $y = (x \quad 1)^2 + 5$ (B) $y = (x \quad 1)^2 \quad 5$ (C) $y = (x + 1)^2 \quad 5$ (D) $y = jx \quad 1j \quad 5$ (E) $y = jx + 1j \quad 5$

29. $\log_5 \frac{p\overline{5}}{5} =$

(A) $\frac{1}{p\overline{5}}$ (B) $\frac{1}{2}$ (C) $\frac{3}{}$