

2015 7th Grade Test

1. What value of r will make the equation below true?

$$\frac{9}{2}r - 4 = 50$$

- A) 21
B) 12
C) $6\frac{5}{7}$
D) $4\frac{3}{4}$
E) 11
2. Mr. Smith asked his students whether they prefer to go to a museum or the zoo for a field trip. He found that 45% of the students prefer to go to a museum, 25% prefer to go to the zoo, and the rest have no preference. What is the ratio of students who have no preference to the students who prefer to go to the museum?
- A) 2:3
B) 1:2
C) 4:9
D) 9:6
E) 3:6
3. A 12-ounce container has 9 ounces of coffee and 3 ounces of milk. A 24-ounce container has the same ratio of coffee to milk. How many ounces of milk are in the 24-ounce container?
- A) 6 ounces
B) 10 ounces
C) 12 ounces
D) 18 ounces
D) 16 ounces
4. A brand of pasta costs \$1.80 for 12 ounces. At this rate, what is the price for 26 ounces of this brand of pasta?
- A) \$3.05
B) \$4.50
C) \$3.10
D) \$3.60
E) \$3.90

5. A movie is being shown on television. The movie is scheduled for a 170-minute time period. There will be some 5-minute commercial breaks (b) throughout the movie. The actual length of the movie is 125 minutes. Which equation could be used to find b , the number of 5-minute commercial breaks?
- A) $170 = -125 + 5b$
B) $170 = 125b + 5$
C) $170 = 5(125 + b)$
D) $125 = 170 - 5b$
E) $125 = 5(170 - b)$
6. Emily's goal is to save \$900. She has already saved \$330. Emily will save \$15 per week. Which equation could be used to find w , the number of weeks Emily needs to save to reach her goal?
- A) $330w = 900$
B) $15w = 330$
C) $330 + 15w = 900$
D) $15w = 900$
E) $15w - 330 = 900$
7. Casey's first cell phone bill of \$80.67 included an activation fee of \$45 and a charge of \$0.29 for each minute used. This situation is represented by the equation below, where x represents the number of minutes used.

$$0.29x + 45 = 80.67$$

According to her cell phone bill, how many minutes did Lauren use the first month?

- A) 123
B) 130
C) 131
D) 136
E) 125

8. The table below shows the time it took Tyler to complete a hiking trail each week for 5 weeks.

Week Number	Time (Minutes)
1	156
2	154
3	152
4	150
5	148

If this pattern continues, which expression represents the time, in minutes, it will take Tyler to complete the hiking trail in week n ?

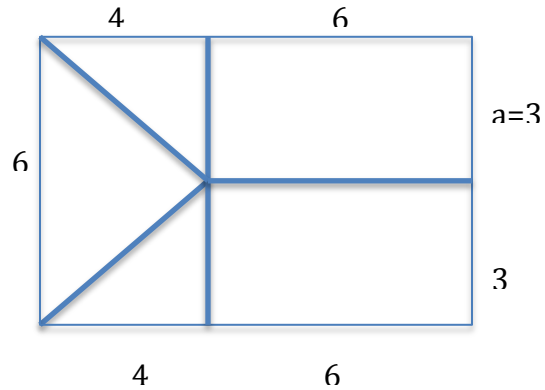
- A) $2n + 158$
 - B) $-2n + 158$
 - C) $n + 2$
 - D) $n - 2$
 - E) $2n + 2$
9. What value of d makes this equation true?

$$\frac{2}{3}d - 10 = 40$$

- A) $55\frac{2}{3}$
 - B) $60\frac{1}{3}$
 - C) 70
 - D) 33
 - E) 75
10. Ms. Smith traveled from Knoxville, Tennessee, to Little Rock, Arkansas. Her trip was 520 miles and took 8 hours. Which trip represents the same rate of travel?
- A) 260 miles in 2 hours
 - B) 325 miles in 5 hours 15 minutes
 - C) 390 miles in 6 hours
 - D) 410 miles in 7 hours
 - E) None of the above trips have the same rate of travel.

11. If the flag below is enlarged proportionally so that “a” increases from 3 units to 4 units, what will be the area of the resulting larger flag? (Note that the flag below is not drawn to scale.)

- A) 76 square units
 B) $76\frac{2}{3}$ square units
 C) 80 square units
 D) $106\frac{2}{3}$ square units
 E) 75 square units



12. For which of the following is y directly proportional to x?

A)

x	y
1	1
2	1/2
3	1/3
4	1/4
5	1/5

B)

x	y
0	0
1	1
2	3
3	6
4	10

C)

x	y
1	1/4
2	1/8
3	1/16
4	1/32
5	1/64

D)

x	y
1	$2\frac{1}{3}$
2	$4\frac{2}{3}$
3	$9\frac{1}{3}$
4	$18\frac{2}{3}$
5	$37\frac{1}{3}$

- E) None of the above tables represent a direct proportional relationship.

13. Carlos and Raphael are brothers. Their friend Joe is joining them for a picture. If Carlos, Raphael and Joe line up randomly for the picture what is the probability that the brothers are side by side?

A) $\frac{1}{3}$

B) $\frac{2}{3}$

C) $\frac{4}{27}$

D) $\frac{1}{2}$

E) $\frac{1}{6}$

14. Which is more likely to happen when flipping a fair coin?

A) getting exactly 4 heads in 10 coin tosses

B) getting exactly 40 heads in 100 coin tosses

C) getting exactly 400 heads in 1000 coin tosses

D) Each outcome is equally likely.

E) A) and B) are equally likely, and more likely than C).

15. What is the probability of getting exactly 3 heads in six tosses of a fair coin?

A) $\frac{5}{16}$

B) $\frac{21}{64}$

C) $\frac{11}{32}$

D) $\frac{1}{2}$

E) $\frac{1}{9}$

16. In Mr. Martin's class, there is one exam, and he allows students to submit as many 250-word essays as they wish. Each 250-word essay earns ten points. Billy is a student in Mr. Martin's class who earned 80 points on his exam. If Billy needs more than 200 total points to pass the class, what is the minimum number of 250-word essays that Billy needs to write?

A) 10

B) 11

C) 12

D) 13

E) 15

17. Which of the following statements is not true?

- A) Getting an odd number when rolling one die is just as likely as getting an even number.
- B) Getting an even sum when rolling two die is just as likely as getting an odd sum.
- C) Getting 600 heads out of 1,000 tosses of a fair coin is just as likely as getting 6 heads out of 10 tosses of a fair coin.
- D) If a committee of two is selected randomly from two girls (Judy and Sue) and two boys (Tom and Bill), it is just as likely that Tom is on the committee as it is that Tom is not.
- E) All are true.

18. Five counterfeit coins are mixed with nine authentic coins. If two coins are drawn at random without replacement, find the probability that one coin is authentic and one is counterfeit.

- A) $\frac{45}{91}$
- B) $\frac{45}{182}$
- C) $\frac{5}{9}$
- D) $\frac{45}{98}$
- E) 50%

19. Quantity A is always double Quantity B. Quantity C is always three times Quantity B. What is the relationship between Quantity A and Quantity C?

- A) $A = \frac{2}{3}C$
- B) $C = \frac{2}{3}A$
- C) $A \times C = \frac{2}{3}$
- D) $A \times C = \frac{3}{2}$
- E) $C = 6A$

20. Suppose the difference of two integers is positive. Consider the following statements:

- i. Both integers have to be positive.
- ii. One integer is larger than the other.
- iii. Both integers could be negative.

Which of the statements above is true?

- A) i only
- B) ii only
- C) iii only
- D) i and ii
- E) ii and iii

21.

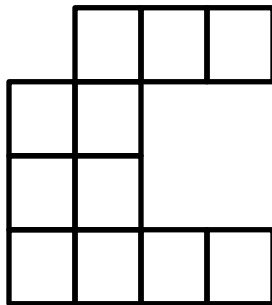


Figure 1

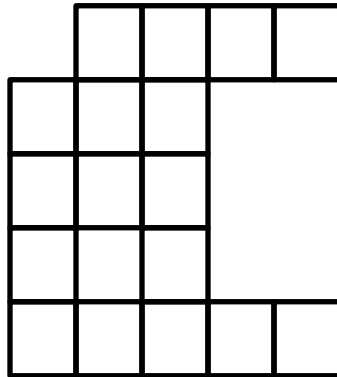


Figure 2

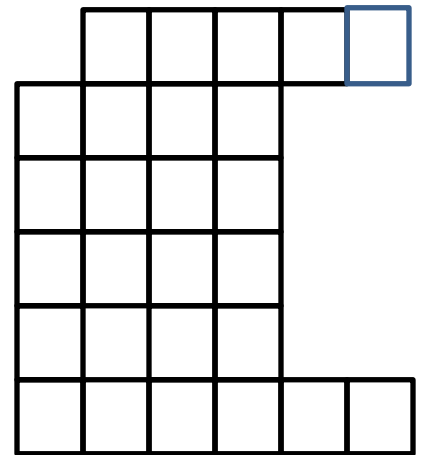


Figure 3

As illustrated above there are 11 tiles in Figure 1. How many tiles are in figure 100?

- A) 704
- B) 9,406
- C) 9,604
- D) 10,406
- E) 10,604

22. Coach Price will order football uniforms from one of the stores listed below.

- Store A sells 25 uniforms for a total of \$1,062.50.
- Store B sells 10 uniforms for a total of \$450.00
- Store C sells 2 uniforms for \$95.00.
- Store D sells uniforms for \$48.50 per uniform.

Which store has the lowest price per uniform?

- A) Store A
- B) Store B
- C) Store C
- D) Store D
- E) At least two stores sell them for the same lowest price per uniform.

23. Five cars travel for 45 minutes on straight flat roads without interruption.

Information about their speeds and time at each speed follows.

Car A travels at 1 km/min for 30 min then travels at 1.2 km/min for 15 min.

Car B travels at 1 mi/min for 20 min then .8 mi/min for 25 min.

Car C travels at 50 mi/hr for 25 min the 70 mi/hr for 20 min.

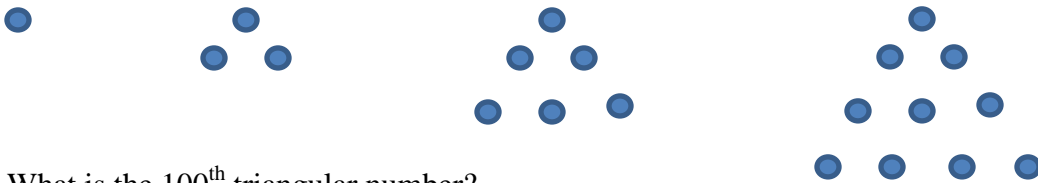
Car D travels at 60 km/hr for 15 min and 80 km hr for 30 min.

Car E travels at 60 mi per hour for 45 minutes.

Which car has the highest average speed for the entire trip?

- A) Car A
- B) Car B
- C) Car C
- D) Car D
- E) Car E

24. As illustrated below: The first triangular number is 1. The second triangular number is 3. The third triangular number is 6. The fourth triangular number is 10.



What is the 100th triangular number?

- A) 5,000
- B) 5,050
- C) 5,100
- D) 10,000
- E) 10,050

25. The hungry ant ate a total of 102 crumbs in 6 days. Each day he ate 4 more crumbs than he did the previous day. How many crumbs did he eat on the first day?
- A) 1
 - B) 3
 - C) 5
 - D) 7
 - E) none of the above
26. Which of the following is most likely closest to a volume of 2 dm^3 ?
- A) a baseball
 - B) a cafeteria
 - C) a lunchbox
 - D) a cell phone
 - E) a flea
27. Tonya is shopping for a new pair of shoes. The store is having a sale of 30% off all pairs of shoes. Tonya has a coupon discount for 10% off anything in the store, and she plans to use it on her shoes. Assuming that the store discount is applied to the pair of shoes, and then the coupon is applied, what percent off of the original price did Tonya actually get? (Assume there is no tax).
- A) 35%
 - B) 40%
 - C) 37%
 - D) 39%
 - E) 60%
28. A cube and a sphere have the same volume. Which is larger, the height of the cube or the diameter of the sphere?
- A) the height of the cube
 - B) the diameter of the sphere
 - C) the two measures are the same
 - D) It is impossible to tell without knowing the actual volume.
 - E) A cube and a sphere cannot possibly have the same volume.
29. What would be the 20th term in the following pattern if the first three terms are 1000, 100, 10, ...
- A) $-(10^{16})$
 - B) $-(10^{17})$
 - C) $10^{(-15)}$
 - D) $10^{(-16)}$
 - E) $10^{(-17)}$

30. Two side lengths of a triangle are 11 and 13. Which of the following is not a possible value for the perimeter of the triangle?
- A) 27
 - B) 33
 - C) 49
 - D) 35
 - E) 29