

7th Grade Exam - 2001

1. Reading from left to right, which of the following lists the numbers in order from smallest to largest?
- a) 0.303, 0.033, 0.33
 - b) 0.33, 0.303, 0.033
 - c) 0.303, 0.33, 0.033
 - d) 0.033, 0.33, 0.303
 - e) 0.033, 0.303, 0.33

2. Laura and George are running for student body President. Laura received 400 votes of the 750 votes cast. 320 males voted in the election and 430 females voted. The following table shows the number of males and females in each grade who voted for Laura. Of the 200 seventh (7th) graders who voted, what % voted for George?

	5 th grade	6 th grade	7 th grade	8 th grade
Male	30	35	70	80
Female	40	35	50	60

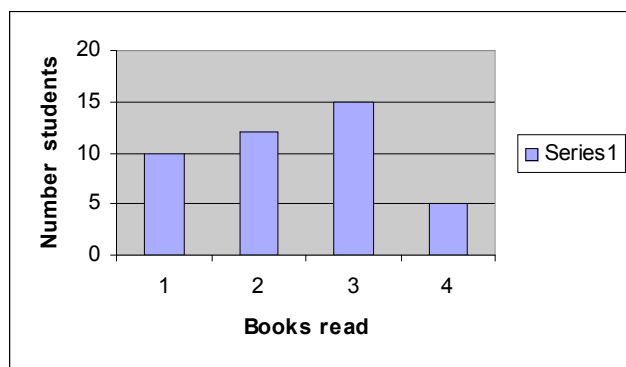
- a) 35%
 - b) 40%
 - c) 60%
 - d) 65%
 - e) $46\frac{2}{3}\%$
3. $10_{\text{base } 2} + 10_{\text{base } 2} =$
- a) $100_{\text{base } 2}$
 - b) $1010_{\text{base } 2}$
 - c) $10010_{\text{base } 2}$
 - d) $10100_{\text{base } 2}$
 - e) $20_{\text{base } 2}$
4. An item costs a storeowner \$50. She marked it up 40% and advertised it at that price. How much profit did she make if she later sold it at 15% off the advertised price?
- a) \$7.50
 - b) \$9.50
 - c) \$10.50
 - d) \$37.50
 - e) \$39.50

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5. The students in after-care at Sam Houston Middle School are forming equal teams to play a game. When the students form teams of 2, 3, or 4, there is always one person left. What is the smallest possible number of students wanting to play the game?
- a) 7
 - b) 9
 - c) 12
 - d) 13
 - e) 25
6. For his science project, David Data administered a survey to the students of Sam Houston Middle School. The survey listed three foods (broccoli, green olives, and jalapeno peppers) and instructed students to place a check by any of the foods that they liked. A survey of 300 students produced the following results: 100 checked broccoli, 200 checked green olives, and 50 checked jalapeno peppers. If 30 students checked all three foods and 20 students checked no foods, how many students checked exactly two of the three foods?
- a) 10
 - b) 15
 - c) 30
 - d) 35
 - e) 40
7. Sam Houston Middle School is designing a school flag. The flag will be 6 ft. by 8 ft. in size. One-quarter inch wide green ribbon will be sewn around the perimeter and across both diagonals. How much ribbon will be needed (rounded to the nearest foot)?
- a) 36 ft.
 - b) 46 ft.
 - c) 48 ft.
 - d) 52 ft.
 - e) 28 ft.
8. The number of molecules in 14 g of carbon-14 is 6.02×10^{23} . A sample contains 1.4 kg of carbon-14. This sample contains how many molecules of carbon-14?
- a) 6.02×10^{25}
 - b) 6.02×10^{26}
 - c) 6.02×10^{21}
 - d) 6.02×10^{24}
 - e) 6.02×10^{22}

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9. There are 42 seventh-graders enrolled at Longview Middle School. Below is a chart detailing how many books were read by the seventh grade students during October. What is the average number of books read by the seventh graders during October?



- a) 3
b) 2
c) $2 \frac{31}{42}$
d) $2 \frac{1}{42}$
e) $2 \frac{5}{14}$
10. If 20% of a class averages 70% on a test, 50% of the class averages 60% on the test, and the remainder of the class averages 40% on the test, what is the overall class average?
- a) 64%
b) 60%
c) 55%
d) 56%
e) 57.5%
11. A rectangular block of polished wood has dimensions 4 cm x 7 cm x 9 cm and costs \$2.75. If price is determined solely by volume, what would one expect to pay for a block of the same type of wood having dimensions 8 cm x 14 cm x 18 cm?
- a) \$11.00
b) \$16.50
c) \$5.50
d) \$22.00
e) \$24.75
12. The sum of the first n consecutive odd natural numbers is n^2 . Find the following sum:

$$1 + 3 + 5 + 7 + \dots + 117$$

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- a) 13,689
- b) 13,456
- c) 3,481
- d) 3,600
- e) 3,364

13. Find the 100th term of the sequence 9, 13, 17, 21 . . .

- a) 100
- b) 305
- c) 3,050
- d) 405
- e) 409

14. A man has one green sock, and he selects a sock at random from a drawer containing 6 red, 7 blue, and 7 green socks. What is the probability he selects a non-green sock?

- a) $\frac{7}{20}$
- b) $\frac{7}{21}$
- c) $\frac{13}{21}$
- d) $\frac{13}{20}$
- e) $\frac{13}{70}$

15. What is the number that is one half of one quarter of one tenth of 800?

- a) 4
- b) 10
- c) 16
- d) 20
- e) 40

16. What is the units digit in 3^{99} ?

- a) 1
- b) 3
- c) 5
- d) 7

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e) 9

17. How many positive divisors does 336 have?

- a) 8
- b) 10
- c) 20
- d) 22
- e) 18

18. The ratio of onions to radishes in a salad is 9 to 4. If the number of onions is decreased by 20% and the number of radishes is increased by 30%, what is the new ratio of onions to radishes?

- a) $\frac{27}{13}$
- b) $\frac{18}{7}$
- c) $\frac{1}{1}$
- d) $\frac{27}{7}$
- e) $\frac{18}{13}$

19. Which one of the following is always true?

- a) The diagonals of a parallelogram are congruent.
- b) The diagonals of a parallelogram are perpendicular.
- c) The diagonals of a parallelogram bisect each other.
- d) The diagonals of a parallelogram bisect the angles of the parallelogram.
- e) None of the above

20. Five points are placed on a circle. What is the maximum number of intersection points possible in the interior of the circle that can be obtained by segments connecting points on the circle?

- a) 5
- b) 6

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- c) 7
- d) 8
- e) 10

21. Which of the following statements is false?
- a) All squares are rectangles.
 - b) Some rectangles are squares.
 - c) Not all squares are parallelograms.
 - d) Some parallelograms are rectangles.
 - e) All rectangles are parallelograms.
22. Three salesmen make trips at regular intervals – the first at every 7 days, the second every 14 days, and the third every 21 days. If they leave the office on the same day for their first trip, how many days will elapse before they again leave the office on the same day?
- a) 7 days
 - b) 28 days
 - c) 35 days
 - d) 42 days
 - e) 56 days
23. Three blocks of cheese weigh 650 kilograms, 680 kilograms, and 760 kilograms. For the purpose of packing and to avoid waste, the cheese is to be cut into pieces of equal weight. The total weight of all these pieces is to be as great as possible. How much should each piece weigh if the total number of pieces is to be as small as possible?
- a) 50 kg
 - b) 25 kg
 - c) 10 kg
 - d) 2 kg
 - e) 1 kg
24. A large cube has a surface area of 216 square centimeters. What is the total surface area of a smaller cube whose edges are half as long as those of the large cube?
- a) 18 sq. cm.
 - b) 27 sq. cm.
 - c) 36 sq. cm.
 - d) 54 sq. cm.

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e) 108 sq. cm.

25. If a and b are real numbers such that $a \cdot b < 0$, which of the following must always be true?

a) $a < b$

b) $a < 0$ and $b > 0$

c) $a < b^2$

d) $a^2b > 0$

e) $\frac{a}{b} < 0$

26. A collection of 30 coins contains some nickels, some dimes, and 2 pennies. The collection has a value of \$1.72. How many dimes are in the collection?

a) 22

b) 20

c) 6

d) 4

e) this collection is not possible

27. A meal at the local Happy House consists of a salad, the main course, a beverage, and a dessert. If the menu contains 3 salads, 4 main courses, 6 beverages and 2 desserts, how many different meals can be ordered if a meal consists of a salad, main course, beverage, and dessert?

a) 15

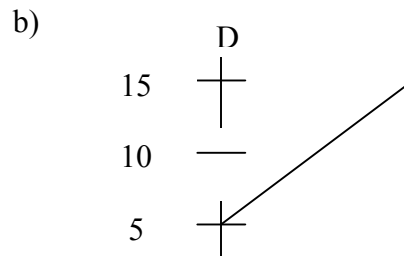
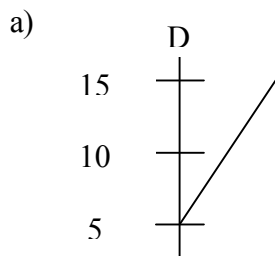
b) 24

c) 60

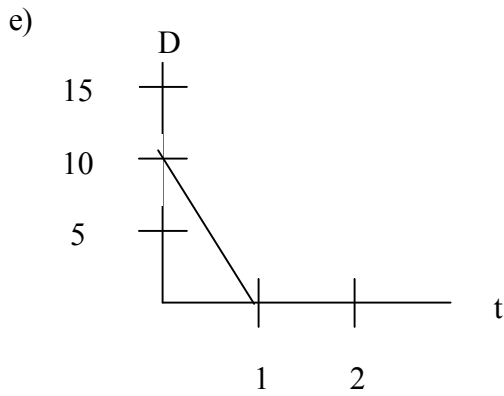
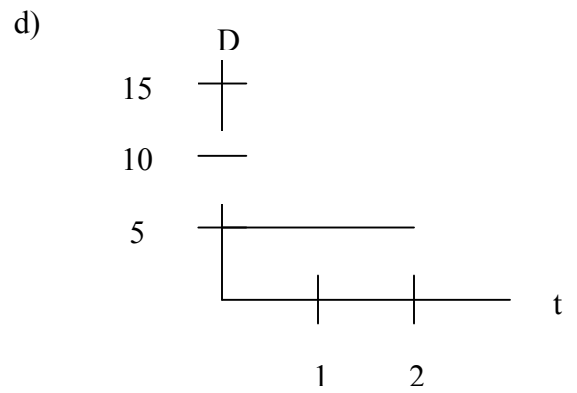
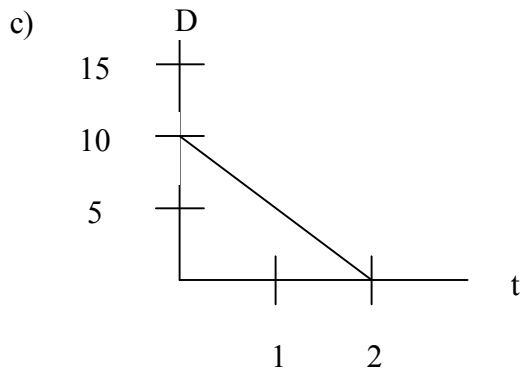
d) 144

e) 256

28. Kelly is riding her bike on a sunny afternoon after school. She starts out 5 miles from home and rides 10 miles per hour away from home. Which of the following graphs most accurately represents Kelly's distance from home at various times if t represents time in hours and D represents distance from home in miles?

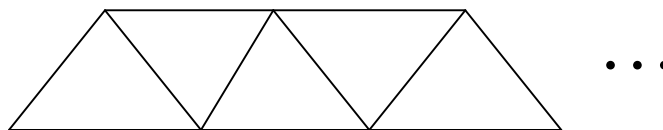


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29. Below is a picture of 5 consecutive equilateral triangles formed using 11 toothpicks. If the picture is continued so that 30 triangles were pictured, how many toothpicks would be used?

- a) 59
- b) 60
- c) 61



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- d) 62
- e) 66

30. Each interior angle of a regular polygon has measure 144° . How many sides does the polygon have?
- a) 8
 - b) 10
 - c) 12
 - d) 14
 - e) 15