Math Drill

Time yourself from start to finish and record your time below. The SAT Non-Calculator section is all about speed and practice makes perfect!

YOUR TIME: _____

Multiplication Facts to 100 (D)

Name: _____   Date: _____   Score: ____ /100

Calculate each product.

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Unit 8 - Statistics
Topic: Mean, Median, Mode, Range

1

Test Scores	67	75	87	91
Number of Students	1	3	2	2

The test scores of 8 students are shown in the table above. Let m be the mean of the scores and M be the median of the score. What is the value of $M - m$?

A) −6

B)   0

C)   3

D)   6

2

The average (arithmetic mean) of five numbers n, $n-3$, $2n+1$, $3n-4$, and $5n+10$ is 8. Which of the following is true?

A) median $= 5$, range $= 18$

B) median $= 5$, range $= 25$

C) median $= 7$, range $= 18$

D) median $= 7$, range $= 25$

3

The average (arithmetic mean) of two numbers is $\frac{1}{2}x+1$. If one of the numbers is x, what is the other number?

A) $x+2$

B) $x-2$

C) -2

D) 2

4

The average (arithmetic mean) of a set of n numbers is 19. If the average of the 6 greatest numbers in the set is 29 and the average of the remaining numbers is 7, what is the value of n?

A) 9

B) 10

C) 11

D) 12

5

The average (arithmetic mean) of m, n, and -1 is 0. What is the value of $m+n$?

**6**

The average (arithmetic mean) test score for all the students in a class is 84. The average score of m boys in the class was 79, while that of n girls was 87. What is the ratio of m to n?

7

A student has an average (arithmetic mean) score of 86 points for 4 tests. What total score does this student need in the next two tests in order to have an average of 90 for all 6 tests?

Topic: Standard Deviation

Questions 1-3 refer to the following information.
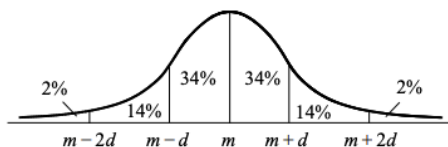
The figure above shows a normal distribution with mean m and standard deviation d, including approximate percentages of the distribution corresponding to the regions shown. Suppose the SAT math scores of 1,200 students entering a certain university are normally distributed with a mean score of 600 and standard deviation of 60.

1

Approximately how many of the students have SAT scores between 660 and 720?

2

Approximately how many of the students have SAT scores less than 540?

3

Approximately how many of the students have SAT scores greater than 720?

Questions 4-6 refer to the following information.

Number of Children	0	1	2	3	4
Frequency		1	2	4	0	1

The table above shows the frequency distribution of the number of children in each of 8 families.

4

Let m be the mean of the data set above. What is the value of m?

5

Let d be the standard deviation of the data set above. What is the value of d?
(Round your answer to the nearest hundredth.)

6

Add 2 to each entry on the original list. Let m_a and d_a be the new mean and the new standard deviation of the data set. Which of the following is true?

A) $m_a = m + 2$ and $d_a = d + 2$

B) $m_a = m$ and $d_a = d + 2$

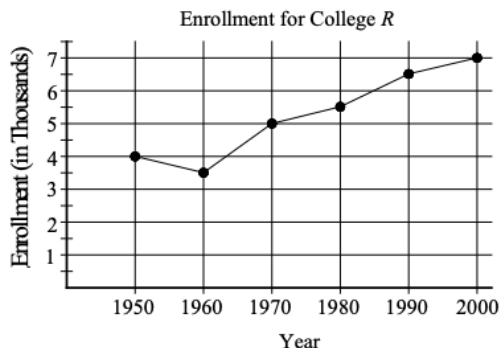C) $m_a = m + 2$ and $d_a = d$

D) $m_a = m$ and $d_a = d$

7

Multiply each entry by 2 on the original list. Let m_p and d_p be the new mean and the new standard deviation of the data set. Which of the following is true?

A) $m_p = 2m$ and $d_p = 2d$

B) $m_p = m$ and $d_p = d$

C) $m_p = 2m$ and $d_p = d$

D) $m_p = m$ and $d_p = 2d$

Topic: Graphical Displays

Questions 1-3 refer to the following information.

Enrollment for College R

The line graph above shows the enrollment for College R between 1950 and 2000.

1

According to the graph above, College R showed the greatest change in enrollment between which two decades?

A) 1950 to 1960

B) 1960 to 1970

C) 1970 to 1980

D) 1980 to 1990

2

What is the average rate of increase in enrollment per decade between 1950 and 2000?

A) 500

B) 600

C) 750

D) 875

3

If enrollment increases by approximately the same percentage between 2000 and 2010 as it decreased between 1950 and 1960, what is the expected enrollment in 2010?

A) 7,250

B) 7,540

C) 7,650

D) 7,875

4
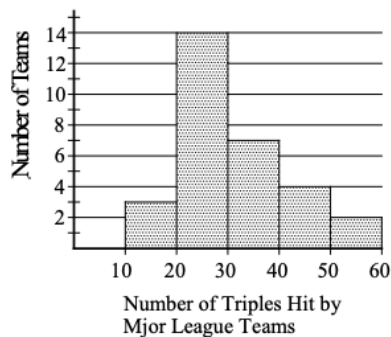
The histogram above shows the distribution of the number of triples hit by 30 major league baseball teams in a certain year. Which of the following could be the median number of triples represented in the histogram?

A) 19

B) 27

C) 32

D) 34

Topic: Scatter Plots and Regression Lines

Questions 1 and 2 refer to the following information.

Average Scores vs. Average Practice Time per Week (in hours)

The scatter plot above shows the average scores of 10 golfers and their weekly practice times. The line of best fit is also shown.
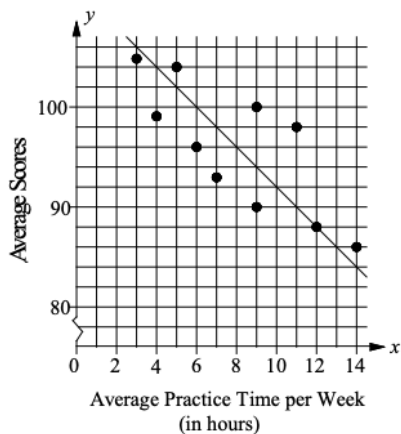
1

What is the average score of the golfer that is farthest from the line of best fit?

A) 93
B) 96
C) 98
D) 99

2

There are two golfers whose average practice time is the same. What is the difference between their average scores?
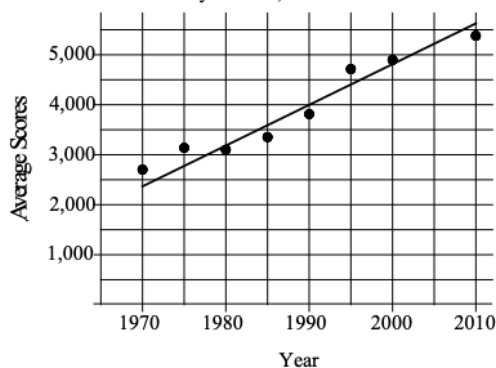
A) 4
B) 6
C) 8
D) 10

3

What is the median score of the 10 golfers?

A) 96
B) 97
C) 98
D) 99

4

Number of cars Repaired at Jay's Motor, 2000 to 2008

According to the line of best fit in the scatter plot above, which of the following best approximate the year in which the number of cars repaired by Jay's Motor was estimated to be 4,500?

A) 1996
B) 1998
C) 2000
D) 2002

Topic: Populations, Samples, and Random Selection

Questions 1-3 refer to the following information.

	Voted for Candidate *A*	Voted for Candidate *B*	Voted for Other Candidates	Total
Ages 18 to 30	84	46	30	160
Ages 31 to 55	72	90	48	210
55 years or older	31	76	23	130
Total	187	212	101	500

A polling organization takes a random sample of 500 voters who voted for the mayoral election of a large western city. The organization gathered data right after the election, as shown in the table above.

1

According to the data above, what percent of people from ages 31 to 55 voted for candidate *B* ?

A) 38%

B) 43%

C) 45%

D) 48%

2

The total population of individuals in the city who voted for the election was about 450,000. What is the best estimate of the total number of votes for candidate *B* ?
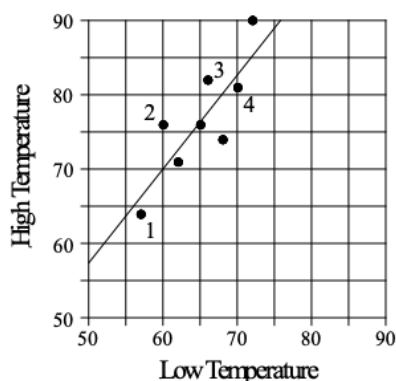
A) 144,000

B) 168,000

C) 190,000

D) 210,000

3

According to the data above, how many times more likely is it for ages 18 to 30 year olds to vote for candidate *A* than it is for ages 55 years or older to vote for candidate *A* ?

A) 2.2

B) 2.4

C) 2.6

D) 2.8

▲

Unit 8 Review Questions

Questions 1-3 refer to the following information.

The graph above is a scatter plot with 8 points, each representing the low temperature and high temperature of 8 days in September in a certain city. Both the low temperatures and high temperatures are measured in degrees Fahrenheit. The line of best fit for the data is also shown.

1

Based on the line of best fit for the data shown, how many degrees does the high temperature increase when the low temperature increases by one degree?

A) 0.9

B) 1.3

C) 1.6

D) 1.8

2

What is the predicted high temperature of the day when the low temperature is 58?

A) 65

B) 68

C) 71

D) 74

3

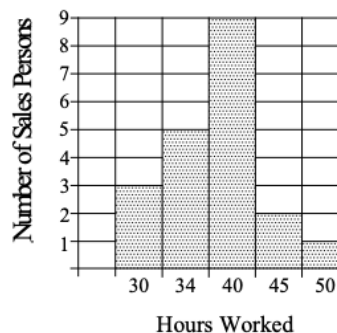Among the four days marked 1, 2, 3, and 4 in the scatter plot, on which day is the difference between the high temperature and the low temperature minimal?

A) Day 1

B) Day 2

C) Day 3

D) Day 4

4

Number of Hours Worked by the 20 Salespersons in Company G

Based on the histogram above, what is the average number of hours worked by the 20 salespersons in Company G?

A) 36

B) 37

C) 38

D) 39

Questions 5 and 6 refer to the following information.

Frequency Distribution for List *A*

Number	0	4	5	6
Frequency	8	10	12	10

Frequency Distribution for List *B*

Number	7	10	11	15
Frequency	10	8	10	12

The table above shows the frequency distribution of two lists. List *A* and list *B* each contain 40 numbers.

5

What is the difference between the average of the numbers in list *B* and the average of the numbers in list *A* ?
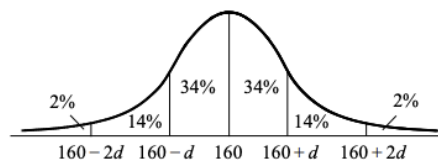
A) 6.5

B) 7

C) 7.5

D) 8

6

List *C* contains 80 numbers: the 40 numbers in list *A* and the 40 numbers in list *B* . Let *m* be the average of 80 numbers in list *C* and *M* be the median of 80 numbers in list *C* . What is the value of $m - M$?

A) 1

B) 1.5

C) 2

D) 2.5

7

The figure above shows a standard normal distribution with mean of 160 and standard deviation *d* , including approximate percents of the distribution corresponding to the regions shown. If the value 148 is at the 12th percentile of the distribution, which of the following is the best estimate of the standard deviation *d* of the distribution?

A) 5

B) 10

C) 15

D) 20

8

The tables below give the distribution of ratings of two different laptops by 100 people each.

Ratings of Laptop *A* by 100 Reviewers

Ratings	5	4	3	2	1
Frequency	28	45	11	7	9

Ratings of Laptop *B* by 100 Reviewers

Ratings	5	4	3	2	1
Frequency	22	24	18	20	16

Which of the following is true about the data shown for the ratings of the two laptops?

A) The standard deviation of the ratings of laptop *A* is larger.

B) The standard deviation of the ratings of laptop *B* is larger.

C) The standard deviation of the two ratings are the same.

D) The standard deviation of the two ratings cannot be determined with the data provided.

Unit 9 - Probability and Categorical Data

Topic: Permutations and Combinations

Questions 1 and 2 refer to the following information.

A hiker is going to hike a mountain where there are four trails to the top of the mountain.

1

In how many different ways can he hike up and down the mountain?

2

If the hiker does not want to take the same trail both ways, in how many different ways can he hike up and down the mountain?

3

In how many ways can the letters of the word SUNDAY be arranged using only 3 of the letters at a time?

Questions 4 and 5 refer to the following information.

Sixteen players participated in a tennis tournament. Three players will be awarded for first, second, and third prize.

4

In how many different ways can the first, second, and third prizes be awarded?

5

How many different groups of 3 people can get prizes?

6

How many different four-letter patterns can be formed from the word MATH if the letters cannot be used more than once?

Topic: Rules of Probability

Questions 1 and 2 refer to the following information.

A bag contains 15 balls, numbered 1 through 15.

1

What is the probability of selecting a number that is odd or a multiple of 5?

2

A ball is selected at random then replaced in the bag. A second selection is then made. What is the probability that the first number is a prime number and the second number is a multiple of 3?

3

$$S = \{-5, -2, -1, 4\} \qquad T = \{-2, 3, 7\}$$

Product $p = s \cdot t$ is formed from the two sets above, in which s is a number from set S and t is a number from set T. What is the probability that the product $s \cdot t$ will be a positive number?

Questions 4 and 5 refer to the following information.

Janis is making a flight reservation for her business trip. The travel agent informs that the probability that her flight to Phoenix will arrive on schedule is 90% and the probability that her flight from Phoenix to Atlanta will arrive on schedule is 80%.

4

What is the probability that both flights arrive on schedule?

5

What is the probability that her flight to Phoenix is on schedule but her flight from Phoenix to Atlanta is not?

6

In a box of 12 headlamps 3 are defective. If you choose two headlamps without replacement, what is the probability that both headlamps are defective?

Topic: Categorical Data and Conditional Probabilities

Questions 1- 5 refer to the following information.

The table below shows the number of college faculty members in three departments: biological sciences, education, and social sciences.

	Biological Sciences	Education	Social Sciences	Total
Male	10	26	19	55
Female	15	21	17	53
Total	25	47	36	108

1

What is the probability that a randomly chosen faculty member is a female given that she is from Biological Sciences?

2

What is the probability that a randomly chosen faculty member is a male or from Social Sciences?

3

What is the probability that a randomly chosen faculty member is a female from Education department or a male from Social Sciences?

4

What is the probability that a randomly chosen faculty member is from Biological Sciences given that the faculty member is a male?

5

For Biological Science and Education faculties combined, $\frac{1}{6}$ of the female and $\frac{1}{4}$ of the male faculty members are associate professors. If a person is randomly chosen from these two departments, what is the probability that a faculty member is an associate professor?

Unit 9 Review Questions

Questions 1-4 refer to the following information.

	Economics	History	Music
Male	24	20	19
Female	18	22	17

The table above shows the distribution of a group of 120 college students by gender and major.

1

If one student is randomly selected from the group, what is the probability that the student is a History major?

A) $\dfrac{36}{120}$

B) $\dfrac{40}{120}$

C) $\dfrac{42}{120}$

D) $\dfrac{46}{120}$

2

If a male student is selected at random, which of the following is closest to the probability that he is a Music major?

A) 0.270

B) 0.302

C) 0.317

D) 0.381

3

If one student is randomly selected from the group what is the probability that the student is a male Economics major?

A) $\dfrac{24}{120}$

B) $\dfrac{42}{120}$

C) $\dfrac{24}{42}$

D) $\dfrac{24}{63}$

4

If a Music major is selected at random, which of the following is closest to the probability that the student is a female?

A) 0.298

B) 0.315

C) 0.386

D) 0.472

Questions 5 and 6 refer to the following information.

	Under 30	30 or older	Total
Male	3		12
Female			20
Total	8	24	32

The incomplete table above shows the distribution of age and gender for 32 people who entered a tennis tournament.

5

If a tennis player is chosen at random, what is the probability that the player will be either a male under age 30 or a female aged 30 or older?

A) $\dfrac{15}{32}$

B) $\dfrac{18}{32}$

C) $\dfrac{20}{32}$

D) $\dfrac{24}{32}$

6

If a person is selected at random from the 30 or older player group, what is the probability that the person is a female?

A) $\dfrac{5}{20}$

B) $\dfrac{15}{20}$

C) $\dfrac{9}{24}$

D) $\dfrac{15}{24}$

Questions 7 and 8 refer to the following information.

Number of Visits to Movie Theaters by Students

	None	1 to 2	3 or more
Juniors	x	$2x$	$\dfrac{1}{2}x$
Seniors	y	$\dfrac{5}{2}y$	$\dfrac{1}{2}y$

The table above summarizes the number of visits to movie theaters by 168 juniors and 152 seniors during summer vacation.

7

If a student is selected at random from those who visited movie theaters at least once, what is the probability that the student is a junior?

A) $\dfrac{16}{39}$

B) $\dfrac{18}{39}$

C) $\dfrac{20}{39}$

D) $\dfrac{22}{39}$

8

If a student is selected at random, which of the following is closest to the probability that the student is a senior and visited movie theaters 1 or 2 times?

A) 0.156

B) 0.205

C) 0.297

D) 0.324