

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 (C)
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Name: _____ Date: _____ Score: ____ /100

Calculate each product.

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Unit 5 - Word Problems in Real-Life Situation*Topic: Problem Solving Using Linear Models***1**

At the beginning of a trip, the tank of Chloe's car was filled with 12 gallons of gas. When she travels constantly on the highway 60 miles per hour, the car consumes 1 gallon of gas per 35 miles. If she traveled 5 hours and 15 minutes on the highway with a constant speed of 60 miles per hour, how many gallons of gas are left in the tank?

- A) 3
- B) 4
- C) 5
- D) 6

2

A rock climber is climbing up a 450 feet high cliff. By 9:30 AM, the climber reached 90 feet up the cliff and by 11:00 AM he has reached 210 feet up the cliff. If he climbs with a constant speed, by what time will he reach the top of the cliff?

- A) 1:45 PM
- B) 2:00 PM
- C) 2:15 PM
- D) 2:30 PM

3

In 2005 a house was purchased for \$280,000 and in 2013 it was sold at \$334,000. Assuming that the value of the house increased at a constant annual rate what will be the price of the house in the year 2018?

- A) \$354,250
- B) \$361,000
- C) \$367,750
- D) \$374,500

4

To join Eastlake Country Club one must pay d dollars for a one time membership fee and pay w dollars for a monthly fee. If the first month is free for the club, what is the total amount, y , x months after a person joined the club, in terms of d , w , and x ?

- A) $y = wx - 1 + d$
- B) $y = w(x - 1) + d$
- C) $y = d(x - 1) + w$
- D) $y = dx - 1 + w$

5

From 1990 to 2000 The population of city A rose from 12,000 to 28,000 and the population of city B rose from 18,000 to 24,000. If the population of the two cities increased at a constant rate, in what year was the population of both cities the same?

6

An empty 1,200 gallon tank is filled with water at a rate of 6 gallons of water per minute. At the same time, another 1,200 gallon tank full of water is being drained at a rate of 9 gallons per minute. How many minutes will it take for the amount of water in both tanks to become the same?

Topic: Solving Word Problems Using Equations

1

	Distance to Finish Line (meters)
Jason	$-8t + 200$
Mary	$-7.5t + 200$

Jason and Mary are running on a 200 meter track. The expressions in the table above show the distance to the finish line t seconds after they started the race. How many meters will Mary have left to finish the race when Jason is on the finish line?

- A) 10.5 meters
- B) 11.5 meters
- C) 12.5 meters
- D) 13.5 meters

2

At a bagel shop the first 6 bagels purchased cost 55 cents apiece, and additional bagels cost c cents apiece. If a customer paid \$5.70 for 12 bagels, what is the value of c ?

- A) 25
- B) 30
- C) 35
- D) 40

3

Manny bought c candies at a price of 70 cents each. He sold all but k candies at a price of \$1.25, and made a profit of p dollars. Which of the following represents p in terms of c and k ?

- A) $p = 1.25(c - k) - 0.7c$
- B) $p = 1.25c - 0.7k$
- C) $p = 1.25c - 0.7(c - k)$
- D) $p = 1.25(c - k) - 0.7k$

4

David used $\frac{1}{10}$ of his monthly salary for groceries

and $\frac{3}{18}$ of his remaining money for his car

payment. He also paid twice as much money for rent as for his car payment. If David has \$1,620 left after paying for groceries, car payment, and rent, how much is his monthly salary?

- A) \$3,240
- B) \$3,320
- C) \$3,480
- D) \$3,600

5

In a school election, 680 students voted for one of two candidates for president. If the winner received 120 more votes than the loser, how many votes did the winner receive?

6

If a gas tank contains 15 liters of gas and is $\frac{3}{8}$ full,

how many additional liters of gas are needed to fill up the tank?

Topic: Solving Word Problems Using Systems of Equations

1

Adam and Betty purchased a printer together for \$258. If Adam paid \$18 less than twice Betty, how much money did Adam pay for the printer?

- A) 172
- B) 166
- C) 158
- D) 146

2

There are 28 tables for customers at Mesa Grill Restaurant. The tables are either two-seat tables or four-seat tables. When all the tables are full, there will be 90 customers in the restaurant. How many two-seat tables are at the restaurant?

- A) 11
- B) 13
- C) 15
- D) 17

3

In a basketball, a field goal is either 2 or 3 points. In a college basketball tournament, Jim made 73 more 2-point field goals than 3-point field goals. If he scored a total of 216 goals in the tournament how many 3-point field goals did he make?

- A) 12
- B) 14
- C) 16
- D) 18

4

In a car dealership, all of the vehicles are either a sedan or a SUV. If 36 sedans are sold and 36 SUVs are added, there will be an equal number of sedans and SUVs. If 8 SUVs are sold and 8 sedans are added, there will be twice as many sedans as SUVs. How many sedans were at the dealership before any vehicle was sold?

- A) 132
- B) 144
- C) 156
- D) 168

5

At a coffee shop, a 16 ounce bag of coffee is on sale at \$5.25 less than the regular price. The cost of 4 bags of coffee at regular price is the same as the cost of 6 bags of coffee at sale price. Let r be the regular price of coffee and s be the sale price of coffee. Which of the following systems of equations can be used to find the values of variables r and s ?

- A) $\begin{cases} s = r - 16 \\ r = 6s \end{cases}$
- B) $\begin{cases} s = r - 5.25 \\ 4r = 16 \end{cases}$
- C) $\begin{cases} s = r - 5.25 \\ 4r = 6s \end{cases}$
- D) $\begin{cases} s = r + 5.25 \\ 4r = 6s \end{cases}$

*Topic: Solving Word Problems using Inequalities***1**

Tom wants to rent a truck for two days and pay no more than \$300. How far can he drive the truck if the truck rental cost \$49 a day plus \$0.40 a mile?

- A) 490
- B) 505
- C) 520
- D) 535

2

Tim has 140 paperback and hard cover copies in his book shelf. If the hard cover copies do not exceed one sixth the number of paperback copies, what is the minimum number of paperback copies in Tim's book shelf?

- A) 114
- B) 116
- C) 118
- D) 120

3

The number of students in a geometry class is four fifths the number of students in a Spanish class. The total number of students in both classes does not exceed 54. What is the greatest possible number of students in the Spanish class?

- A) 30
- B) 32
- C) 34
- D) 36

4

At a sporting goods store, Jay paid \$172 for a pair of shoes and a pair of pants. The pants cost less than two thirds of what the shoes cost. What is the minimum price of the shoes to the nearest dollar?

5

Ty earns \$14 an hour working on weekdays and \$21 an hour working on weekends. If he wants to make at least \$600 by working a total of 36 hours in a week, to the nearest hour, at least how many hours does he need work on the weekends?

Unit 5 Review Questions

Questions 1 - 3 refer to the following information.

The manager of an apartment building needs an electrician to repair the power generator for the building. The table below shows the fixed amount for a time service call and hourly charges for two different companies.

Company	Fixed amount for a service call	Hourly Rate
A	\$40	\$55
B	\$75	\$48

1

Which of the following equations gives the total cost, y , of repairing the power generator in terms of the total number of hours, x , from company A?

- A) $y = 48x + 75$
- B) $y = 75x + 48$
- C) $y = 40x + 55$
- D) $y = 55x + 40$

2

For what number of hours, x , will the total cost of repairing the generator for company B be less than or equal to the total cost of repairing the generator for company A?

- A) $x \geq \frac{5}{2}$
- B) $x \leq \frac{5}{2}$
- C) $x \geq 5$
- D) $x \leq 5$

3

Company B's total cost, y , is the fixed amount for a service call plus the hourly rates. If the relationship between Company B's total cost, y , and the number of hours, x , is graphed in the xy -plane, what does the slope of the line represent?

- A) Fixed amount for a service call
- B) Hourly Rate
- C) Total amount for one day
- D) Total amount for repairing the power generator

4

Apex Car Rental company charges a flat fee of \$40.00 per day plus \$0.75 per mile to rent a car. Jason Car Rental company charges a flat fee of \$64.00 per day plus \$0.60 per mile to rent a car. If a car is rented for three days, at how many miles would the rental charges of the two companies be the same?

- A) 480
- B) 450
- C) 420
- D) 380

5

It took Sara a total of 42 minutes to jog from home to the park and back again, by the same path. If she averaged 8 miles per hour going to the park and 6 miles per hour coming back, what is the distance from her home to the park?

- A) 2.4 miles
- B) 2.8 miles
- C) 3.2 miles
- D) 3.6 miles

6

Carl drove from his home to the beach at an average speed of 50 mph and returned home along the same route at an average speed of 30 mph. His total driving time for the trip was 2 hours. Solving which of the following systems of equations yields, x , the time it took for Carl to drive to the beach and, y , the time spent for the return trip?

- A) $x = y + 2$
 $50x = 30y$
- B) $x + y = 2$
 $30x = 50y$
- C) $x + y = 2$
 $50x = 30y$
- D) $y = x + 2$
 $30x = 50y$

7

To join Ace Gym, one must pay a \$180 membership fee plus dues of \$35 per month. To join Best Gym, one must pay a \$300 membership fee plus dues of \$23 per month. At how many months would the total cost of either gym be the same?

- A) 7
- B) 8
- C) 9
- D) 10

8

At a county fair the admission is \$8.00 and each ride costs \$1.25. If you go to the fair with \$20.00, what is the maximum number of rides you can go on?

- A) 8
- B) 9
- C) 10
- D) 11

9

A car averages 18 miles per gallon of gas for city driving and 27 miles per gallon of gas for highway driving. What is the total number of gallons of gas needed to drive $6x$ miles in the city and $18x$ miles on the highway?

- A) x
- B) $2x$
- C) $3.5x$
- D) $4.5x$

10

One section of a grocery store display only water bottles. The water bottles are in either 6-bottle packages or 8-bottle packages. Let x represent the number of 6-bottle packages and y represent the number of 8-bottle packages. The total number of packages displayed are 270 and the total number of bottles are 1,860. To find the values of variables x and y , which of the following systems of equations can be used?

- A) $\begin{cases} x + y = 1,860 \\ 6x + 8y = 270 \end{cases}$
- B) $\begin{cases} 6x + 8y = 1,860 \\ x + y = 270 \end{cases}$
- C) $\begin{cases} 8x + 6y = 1,860 \\ x + y = 270 \end{cases}$
- D) $\begin{cases} x + y = 1,860 \\ 8x + 6y = 270 \end{cases}$

Unit 6 - Ratios, Rates, and Proportions*Topic: Ratios and Rates***1**

The ratio of $1\frac{3}{4}$ to $2\frac{1}{2}$ is equal to the ratio of 14 to what number?

- A) 18
- B) 20
- C) 22
- D) 24

2

The sum of two numbers is 14 and the ratio of the two numbers is -3 . What is the product of the two numbers?

- A) -105
- B) -119
- C) -133
- D) -147

3

If $2(x - y) = 3y$, what is the ratio $\frac{x}{y}$?

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

4

The ratio of length to width of a rectangular garden is $6:7$. If the perimeter of the rectangle is 78 meters, what is the area of the garden in square meters?

- A) 274
- B) 326
- C) 352
- D) 378

5

A car travels 218.5 miles on 9.5 gallons of gas. What is the car's gas mileage?

6

At a grocery store, 20 fl oz of brand *A* vitamin water is sold for \$0.95. What is the unit price of the vitamin water per ounce, to the nearest cents?

7

The density of aluminum is 2.7 grams per cm^3 . How many grams does 12 cm^3 of aluminum weigh?

Topic: Proportions

1

On a map, 1 inch represents 5 miles. If a certain state is represented on a map by a rectangle 10 inches by 7.2 inches, what is the area of the state in square miles?

- A) 360 mi^2
- B) 720 mi^2
- C) $1,080 \text{ mi}^2$
- D) $1,800 \text{ mi}^2$

2

Together there are 754 students and teachers in the meeting. If the ratio of students to teachers is $27 : 2$, how many teachers are there?

- A) 46
- B) 52
- C) 58
- D) 64

3

Concrete is made by mixing cement, sand, and gravel in the ratio $5 : 9 : 13$. How much cement is needed to make 324 ft^3 of concrete?

- A) 54 ft^3
- B) 60 ft^3
- C) 84 ft^3
- D) 108 ft^3

4

If Andy drove 84 miles in 1 hour 45 minutes, how many miles can he drive in 5 hours?

5

A collection of quarters, dimes, and nickels is worth \$5.00. If the ratio of quarters to dimes to nickels is $2 : 4 : 7$, how many quarters are there?

6

If $\frac{5x}{3} = \frac{x+14}{2}$, what is the value of x ?

7

A trail mix contains raisin, peanut, and chocolate. The ratio of raisin to peanut is $2 : 3$ and the ratio of peanut to chocolate is $5 : 8$. What is the ratio of raisin to chocolate?

Topic: Ratios, Rates, and Proportions Word Problems

1

If 20 machines produce 1,240 printers in a day, how many more machines are needed to produce 1,984 printers in a day?

- A) 12
- B) 20
- C) 24
- D) 32

2

If $\frac{3}{4}$ quart of lemonade concentrate is mixed with $6\frac{2}{3}$ quarts of water to make lemonade for 40 people, how many quarts of lemonade concentrate are needed to make the lemonade for 24 people?

- A) $\frac{3}{10}$
- B) $\frac{7}{20}$
- C) $\frac{2}{5}$
- D) $\frac{9}{20}$

3

A machine produced 735 tapes in $5\frac{1}{4}$ hours. What fraction of the 735 tapes was produced in one hour?

- A) $\frac{1}{7}$
- B) $\frac{4}{21}$
- C) $\frac{5}{21}$
- D) $\frac{2}{7}$

4

A 32-acre field yields 768 bushels of corn each year. How many more acres are needed to yield 960 bushels of corn each year?

- A) 6
- B) 8
- C) 10
- D) 12

5

The length of a rectangle is 8 inches longer than the width. If the ratio of the length to perimeter is 5:16, what is the area of the rectangle?

- A) 160 in^2
- B) 180 in^2
- C) 240 in^2
- D) 280 in^2

6

If 12 grams of coffee costs x dollars and each gram makes y cups of coffee, what is the cost of one cup of coffee in terms of x and y ?

- A) $\frac{12y}{x}$
- B) $\frac{y}{12x}$
- C) $\frac{12x}{y}$
- D) $\frac{x}{12y}$

Unit 6 Review Questions

1

The density of an object is equal to the mass of the object divided by the volume of the object. What is the mass, in grams, of an object with a volume of 0.01 m^3 and a density of 4.54 grams per cubic centimeters? ($1 \text{ m} = 100 \text{ cm}$)

- A) 454
- B) 4,540
- C) 45,400
- D) 454,000

2

Jason and Donny painted a house and received \$1,200. To complete the painting job Jason painted 4 hours 25 minutes and Donny spent 2 hours and 15 minutes. If they split the \$1,200 in proportion to the amount of time each spent painting, how much did Donny receive?

- A) \$405.00
- B) \$443.00
- C) \$472.00
- D) \$492.00

3

The tennis balls in a bag are either white or yellow. If the ratio of white balls to yellow balls is $\frac{3}{10}$, which of the following could not be the number of balls in the bag?

- A) 26
- B) 39
- C) 42
- D) 52

4

A car is traveling at a constant rate of x miles per hour. How many miles will the car travel in y minutes?

- A) $60xy$
- B) $\frac{60x}{y}$
- C) $\frac{xy}{60}$
- D) $\frac{y}{60x}$

5

A tree is 8 feet tall and grows 8 inches each year. In how many years will the tree reach a height of 30 feet?

- A) 27
- B) 33
- C) 45
- D) 52

6

Aaron reads x pages of a science fiction book in m minutes. If he continues reading at this rate, what will be the number of pages he reads in $20m$ seconds?

- A) $\frac{1}{3}x$
- B) $\frac{1}{2}x$
- C) $\frac{2}{3}x$
- D) $2x$

7

If $\frac{x}{y} = 1$, what is the value of $x - y - 1$?

- A) -1
- B) 0
- C) 1
- D) The value cannot be determined from the information given.

8

In a certain room the ratio of males to females is 4 to 5. After 8 males enter the room, the ratio of males to females is 6 to 5. What is the total number of people in the room before the additional males enter the room?

- A) 27
- B) 36
- C) 45
- D) 54

9

A person is born every 5 seconds and a person dies every 12 seconds. How many seconds does it take for the population to grow by one person?

- A) 7 sec
- B) $8\frac{4}{7}$ sec
- C) 10.5 sec
- D) $10\frac{5}{7}$ sec

10

Steve is going to paint a wall that measures 9 feet by 12 feet. If one gallon of paint is needed for each s square foot of wall and each gallon costs g dollars, in terms of s and g how much does it cost to paint the entire wall?

- A) $\frac{108}{gs}$
- B) $\frac{gs}{108}$
- C) $\frac{108s}{g}$
- D) $\frac{108g}{s}$

11

If 2 inches are equivalent to 5 centimeters, how many square centimeters are in one square inch?

12

A large painting has a length of 18 inches and a width of 12 inches. If each dimension is reduced by x inches to make the ratio of length to width 5 to 3, what is the value of x ?

Unit 7 - Percents*Topic: Percent of Change***1**

Which of the following is equivalent to 0.03 % of 4?

- A) 0.12
- B) 0.012
- C) 0.0012
- D) 0.00012

2

$$\frac{1}{400} =$$

- A) 0.25%
- B) 0.025%
- C) 0.0025%
- D) 0.00025%

3

The quantities x and y are positive. If x is decreased by 20 percent and y is increased by 20 percent, then the product of x and y is

- A) unchanged
- B) decreased by 4%
- C) increased by 5%
- D) decreased by 6%

4

By what percent is 4.5×10^5 greater than 9×10^4 ?

- A) 200%
- B) 400%
- C) 500%
- D) 600%

5

The temperature increased from 60°F to 72°F . What is the percent increase in temperature?

- A) 15%
- B) $\frac{50}{3}\%$
- C) 20%
- D) $\frac{70}{3}\%$

6

This year's enrollment in Mesa School District is 6,000, which is 20 percent higher than last year's. What was last year's enrollment in Mesa School District?

7

If 125% of x is 80 and x is $n\%$ of 400, what is the value of n ?

Topic: Percents and Equations

1

28% of what number is 7?

2

3.6 is 240% of what number?

3

 $\frac{1}{2}\%$ of 180 is what number?

4

 $3\frac{1}{3}\%$ of what number is 2.5?

5

26.4 is 0.55% of what number?

6

What percent of 12 is 8?

A) 60%

B) $66\frac{2}{3}\%$

C) 75%

D) $130\frac{1}{3}\%$

7

54 is 120% of k .

Which of the following proportions could be used to solve the above expression?

A) $\frac{100}{120} = \frac{54}{k}$ B) $\frac{54}{100} = \frac{120}{k}$ C) $\frac{100}{54} = \frac{120}{k}$ D) $\frac{120}{100} = \frac{54}{k}$

8

If Kevin's monthly salary of \$4,500 is 72 percent of Paul's monthly salary, what is Paul's monthly salary?

A) \$3,240

B) \$5,150

C) \$5,870

D) \$6,250

Topic: Percent Word Problems

1

There are n candies in a jar. If one candy is removed, what percent of the candies are left in terms of n ?

A) $100(1-n)\%$

B) $100(\frac{1}{n}-1)\%$

C) $100(n-\frac{1}{n})\%$

D) $100(\frac{n-1}{n})\%$

2

The price of a cellphone was discounted by 25% and then discounted an additional 20%, to become \$348. What was the original price of the cellphone before it was discounted twice?

A) \$580.00

B) \$620.00

C) \$650.00

D) \$680.00

3

A chemist mixes a 40% acid solution and a 30% acid solution. How many liters of the 40% solution must be added to produce 50 liters of a solution that is 36% acid?

A) 24

B) 26

C) 30

D) 32

4

Victor invests part of his \$5,000 in a savings account that pays 4.5% annual simple interest. He invests the rest in bonds that pay 8% annual simple interest. Let s be the amount invested in savings and r be the amount invested in bonds. Victor's total income in one year from these investments is \$305.50. Which of the following systems of equations represents this relationship?

A)
$$\begin{cases} 0.045s + 0.08r = 5,000 \\ s + r = 305.50 \end{cases}$$

B)
$$\begin{cases} 0.08s + 0.045r = 5,000 \\ s + r = 305.50 \end{cases}$$

C)
$$\begin{cases} s + r = 5,000 \\ 0.045s + 0.08r = 305.50 \end{cases}$$

D)
$$\begin{cases} s + r = 5,000 \\ 0.08s + 0.045r = 305.50 \end{cases}$$

5

A sporting goods store added 50% profit cost and 8% tax to the price of a backpack, which then became \$129.60. What was the price of the backpack before adding profit and tax?

6

There are 800 students in a school and 45% of the students are male. If 30% of the male students and 25% of the female students play varsity sports, how many students play varsity sports?

Unit 7 Review Questions

1

A chemist mixes x mL of a 34% acid solution with a 10% acid solution. If the resulting solution is 40 mL with 25% acidity, what is the value of x ?

- A) 18.5
- B) 20
- C) 22.5
- D) 25

2

The price of a package of 4 pens is \$8.00. The same pens are sold at \$2.50 each. If Alex bought three packages of pens rather than buying 12 pens individually, the amount he saved on 12 pens is what percent of the amount he paid?

- A) 12%
- B) 20%
- C) 25%
- D) 30%

3

There are 600 bottles of sports drinks in a store. 25% of the bottles are orange flavored drinks. On Monday 30% of the orange flavored drinks in the store were sold and on Tuesday 20% of the remaining orange flavored drinks were sold. How many bottles of orange flavored drinks were sold in the two days?

- A) 52
- B) 58
- C) 66
- D) 75

4

A tablet with a list price of x dollars is discounted by 15% and then discounted an additional 12%. What is the final sale price of the tablet, in terms of x ?

- A) $0.73x$
- B) $0.748x$
- C) $0.75x$
- D) $0.765x$

5

There is a total of n pairs of shoes in a store, all of which are either black or brown. If there are m pairs of brown shoes in the store, then in terms of m and n , what percent of the shoes in the store are black?

- A) $\frac{m}{n}\%$
- B) $\frac{n-m}{n}\%$
- C) $(1 - \frac{100m}{n})\%$
- D) $100(1 - \frac{m}{n})\%$

6

The numbers a , b , and c are positive and a equals $3.2bc$. If b is increased by 150% and c is decreased by 60%, then a is

- A) increased by 90%
- B) increased by 10%
- C) unchanged
- D) decreased by 10%

7

There are 10 history books in a bookcase. When the number of books increases by x percent, the new number of history books is 24. What is the value of x ?

- A) 58
- B) 70
- C) 120
- D) 140

8

Number n is 25 less than 120 percent of itself. What is the value of n ?

- A) 125
- B) 120
- C) 105
- D) 90

9

Of the 500 cars displayed in a certain car dealer, 7 percent are blue and 4 percent are red. The number of blue cars in the car dealer are what percent greater than the number of red cars?

- A) 30%
- B) 50%
- C) 75%
- D) 125%

10

If 300% of 0.18 is equivalent to 20% of b , then b is equivalent to what number?

11

Five people contributed \$9,000 each toward the purchase of a sailboat. If they ended up paying \$38,500 plus 8% sales tax for the boat, how much money should be refunded to each person?

12

A store used to sell an MP3 for \$72, which is 50% more than the wholesale cost. At a special holiday sale, the price of the MP3 was 20% less than the wholesale cost. What was the special sale price of the MP3?