

# Mindset Strategy Practice for SAT Math

## Chapter 12: Sample Test

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## Dear Student,

I'd like to tell you about Michael, a bright student who was studying with me for the SAT a few years back. Michael was an excellent athlete and attacked his SAT prep with the same determination and enthusiasm that he showed at baseball practice. He received a 1210 on his first practice test and immediately set a goal for a significant improvement. He worked hard, and his next two practice test scores of 1280 and 1310 were satisfying improvements but not the final goal.

A couple weeks after the third practice test, Michael came to tutoring with excitement all over his face. I could tell immediately he had news for me. He had taken a fourth practice test at home, scored it himself, and received a 1480! Michael was practically jumping out of his skin, he was so excited about it. I, on the other hand, felt my stomach drop. There was something wrong about this score. He used a test that wasn't written by the College Board, he took it at home without timing himself, and he scored it himself. Most of all, the jump in score was highly unusual. The 1480 was a peak, and what happens after peak is almost always a drop. Of course, I was happy for Michael, but my intuition told me he was setting himself up for a disappointment.

Michael didn't take another practice test before his official SAT, but he did continue to study. On test day, he went to the center feeling confident and actually did very well! He received a 1390 on his official SAT, which was a 180-point improvement over his baseline. He had prepped for about three months, and, in my opinion, that was about the right amount of improvement for his investment of time. However, Michael was expecting about 100 points higher. I'm not certain if he decided to take the test again, but he didn't come for any more tutoring after the big disappointment.

If he had been able to ignore the peak score of 1480, I believe Michael would have been much happier with his respectable 1390 and would have been more motivated to continue to work toward something in the 1400's. Keep Michael's story in mind if you happen to peak on a practice test, such as the one in this chapter. Give yourself credit for working hard and showing improvement but recognize an outlier when you see one. Remind yourself there are no guarantees on test day and that you can - and should - take the official test multiple times until you get the score you know you are capable of.

I'd also like to tell you about Jennifer, who scored a 1300 on her first practice test, taken December of her sophomore year. What a great place to start! However, Jennifer and her parents knew that she struggled with anxiety to the point where she needed medical treatment, and they knew the pressure of test day was likely to prevent her from doing her best. Jennifer came to one tutoring session to review the results of her practice test, but then put SAT prep on hold to focus on her challenging classes. Although she wasn't working on test prep for the next six months, it helped a lot that she had experienced the test once and could recognize how the skills she was developing in school might be applied on the SAT.

Once summer started, she started to work seriously on test prep. She attended class twice a week, took a practice test every month, and scheduled tutoring sessions to review each of the tests with me. Jennifer's June practice test was actually an ACT. She scored a 31, which is approximately equal to a 1400 on the SAT. I was delighted with that score, but she was a mess

after the test. The tight timing on the ACT caused her anxiety to skyrocket to the point that we needed to take breaks during the next tutoring session just to let her calm down. After that experience, we decided to focus solely on the SAT. In July and August, she took two more practice tests and received a 1430 and 1400.

In September, she took a practice PSAT and received a 1480, a score that could potentially earn her a National Merit Scholarship! The official PSAT was in October. The pressure was high - to the point that Jennifer had a mild panic attack in the car as her mom was driving her to the test. She was able to pull herself together and put her best effort into the test. However, the anxiety had its anticipated effect, and her official PSAT score dropped to a 1390.

The next practice test was in November, which she took in my classroom with a handful of other students. Since she had taken multiple tests in this classroom with someone timing her and giving her limited breaks, she was feeling more at ease with the process. She knew she could succeed in this environment, and she did indeed. Jennifer scored a 1460 on the November practice test.

Jennifer took the Official SAT in December of her junior year. It was a full year after her baseline score of 1300, and she had invested six months to dedicated SAT prep. Her dad drove her to the testing center and distracted her with a pleasant conversation about her siblings rather than about the test to come. When she sat down for the test, she felt the same ease that came to her during the last practice test in my classroom. She reminded herself that this was just her first SAT and that she would have several opportunities to take additional tests to improve her score. She mentally reviewed the strategies I had taught her just before she began each section. In the end, Jennifer did the best thing she could have possibly done in an official test: *she peaked*. When the official score came in two weeks later, it was a 1520!

Michael and Jennifer both did a great job on the SAT. Although he was hoping for more, Michael got a respectable 180 point improvement from his 3 month investment in test prep. Jennifer earned 220 points from her 6 month investment and was able to overcome her anxiety when it mattered the most. They both have SAT scores they can be proud to include in their college applications. Their journeys followed patterns that I've seen in dozens of students ambitious enough to dedicate themselves to test prep. (Although it was a pleasant surprise that Jennifer had the good fortune to peak during her first official SAT.)

I hope that you are ambitious enough to invest your time and energy into studying for the SAT, and I am confident that your score will improve slowly and steadily if you do. Keep practicing on a regular schedule, ignore any peaks in practice tests, and remind yourself you can take the test as many times as you need to. Your journey will be unique to you, but you have every reason to expect that you will be rewarded for your hard work on test day.

Sincerely,

Ms. Krey

## Practice Test – No Calculator

25 minutes, 20 questions

**Directions:** This activity is designed to help you practice your pacing strategy for section 3 of the SAT: the No Calculator Math section. Make sure you will have 25 uninterrupted minutes to complete the activity. Remember to practice these strategies while taking the test:

- Start at the beginning, and do not rush the easy questions.
- Around question 10, skip ahead to the grid-ins.
- If you run out of time, guess on any remaining multiple choice questions.
- Read each question three times: (1) scan to make a plan (2) read carefully to unpack the data, then solve the problem, and (3) read one more time to make sure you didn't fall for traps.
- Bubble in your answers at the end of each two-page spread.

Most importantly, keep your hands off the calculator for this entire activity.

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1.) Which of the following is equivalent to  $5(x-1)+8$ ?

- A)  $5x-3$
- B)  $5x+3$
- C)  $5x+7$
- D)  $40x-1$

2.) The equation below relates the number of hours,  $x$ , Dan spends watching television each week and the number of hours,  $y$ , he spends playing video games each week. In the equation, what does the number 12 represent?

$$x + y = 12$$

- A) The number of hours spent watching television each week
- B) The number of hours spent playing video games each week
- C) The total number of hours spent watching television and playing video games each week
- D) The number of hours spent watching television for each hour playing video games

3.) Which of the following complex numbers is equal to  $(3+4i)-(2i^2-5i)$ , for  $i=\sqrt{-1}$  ?

- A)  $i^2-9i$
- B)  $1+9i$
- C)  $5-i$
- D)  $5+9i$

4.) Which ordered pair  $(x,y)$  satisfies the system of equations shown below?

$$y = x + 2$$

$$\frac{x}{3} + 2y = 18$$

- A) (6,8)
- B) (8,6)
- C) (8,10)
- D) (10,8)

5.) A construction business purchased a piece of equipment for \$13,580. If the equipment depreciates in value at a constant rate for 14 years, after which it is considered to have no monetary value, how much is the equipment considered to be worth 6 years after it is purchased?

- A) \$5,820
- B) \$6,790
- C) \$7,760
- D) \$12,980

6.) If  $f(x) = \frac{(x+2)(x-6)}{2x+3}$ , what is  $f(-3)$ ?

- A) -3
- B) -1
- C) 1
- D) 3

7.) Lizzie has a summer job at a sandwich shop. In her first week on the job, Lizzie was considered a trainee, and earned \$9 per hour. For all subsequent weeks, she earned \$12 per hour. If Lizzie works 20 hours per week and saves 80% of her pay, what is the minimum number of total weeks will she have to work to save at least \$3000?

- A) 10
- B) 11
- C) 13
- D) 16

8.) Which of the options is equivalent to the following expression?

$$x^2 + 12x - 7$$

- A)  $(x+6)^2 + 43$
- B)  $(x+6)^2 - 43$
- C)  $(x-6)^2 + 43$
- D)  $(x-6)^2 - 43$

9.) Consider the equation

$y = ax^3 + bx^2 + cx + d$  where  $a, b, c,$  and  $d$  are constants. When the equation is graphed on the  $xy$ -plane, the  $x$ -intercepts are 0, 2, and 7.

Which of the following must be a factor of  $ax^3 + bx^2 + cx + d$ ?

- A)  $x + 2$
- B)  $x - 3$
- C)  $x - 7$
- D)  $x - 1$

10.) Deepit is in charge of a project to beautify the land around a small parking lot by placing at least 20 plants. The landscaping contractor he is working with will charge \$225 per tree and \$85 per shrub. Deepit's budget for this project is no more than \$1500. He also wants a minimum of 5 trees and 5 shrubs. Which of the following systems of inequalities represents the conditions described if  $x$  is the number of trees and  $y$  is the number of shrubs?

A)  $225x + 85y \leq 1500$

$$x + y \geq 20$$

$$x \geq 5$$

$$y \geq 5$$

B)  $225x + 85y \geq 1500$

$$x + y \leq 20$$

$$x \leq 5$$

$$y \leq 5$$

C)  $225x + 85y \geq 1500$

$$x + y \geq 20$$

$$x \geq 5$$

$$y \geq 5$$

D)  $225x + 85y \leq 1500$

$$x + y \leq 20$$

$$x \geq 5$$

$$y \geq 5$$

11.) The graph of  $f(x) = (x - 3)(x + 2)$  is in the shape of a parabola. Which of the following intervals contains the x-coordinate of this parabola's vertex?

- A)  $-6 < x < -1$
- B)  $-3 < x < 0$
- C)  $-2 < x < 3$
- D)  $2 < x < 3$

12.) Given that  $a > 1$  and  $b > 1$ , which option is equal to the expression below?

$$\frac{a^{-5}b^{\frac{4}{3}}}{a^{\frac{1}{2}}b^{-2}}$$

- A)  $\frac{a^5\sqrt[3]{a}}{b^3\sqrt{b}}$
- B)  $\frac{a^{11}\sqrt[3]{a}}{b^3\sqrt{b}}$
- C)  $\frac{b^2\sqrt[3]{b}}{a^5\sqrt{a}}$
- D)  $\frac{b^3\sqrt[3]{b}}{a^5\sqrt{a}}$

13.) A fencing company is offering a promotion where customers who order a fence will receive a gift card. The amount of the gift card depends on the sum of the perimeter of the yard to be fenced and the height of the fence. If that value is below 85 feet, the customer will receive a \$50 gift card. If that value is 85 feet or above, the customer will receive a \$100 gift card. If Mike has a yard that is 10 feet wide and has a length 3 times its width, which of the following inequalities shows the height of fence that Mike could order and receive a \$50 gift card?

- A)  $0 < x \leq 5$
- B)  $0 < x \leq 30$
- C)  $0 < x < 5$
- D)  $0 < x < 30$

14.) Which of the following expressions is equivalent to  $\frac{x^2 + 7x - 5}{x + 2}$ ?

- A)  $x + 5 - \frac{15}{x + 2}$
- B)  $x + 7 - \frac{5}{x + 2}$
- C)  $x + 6 - \frac{7}{x + 2}$
- D)  $x + 9 + \frac{13}{x + 2}$

15.) The expression  $\frac{1}{6}x^2 - 3$  can be written as

an expression in the form  $\frac{1}{6}(x + \sqrt{a})(x - \sqrt{a})$

for what value of  $a$ ?

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

B)  $3\sqrt{2}$

C) 9

D) 18

For questions 16-20, solve the problem and enter you answer into the provided grid.

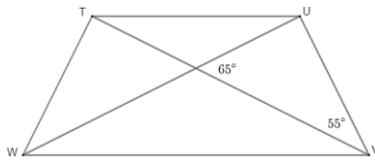
16.) If  $3z - 4 = 11$ , what is the value of  $z - 2$  ?

/	○	○	○	○
.	○	○	○	○
0	○	○	○	○
1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4.	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○
0	○	○	○	○

18.) The number of radians in a  $1260^\circ$  angle can be written as  $k\pi$ , where  $k$  is a constant. What is the value of  $k$ ?

/	○	○	○	○
.	○	○	○	○
0	○	○	○	○
1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4.	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○
0	○	○	○	○

17.) In the figure below,  $TUVW$  is an isosceles trapezoid with bases  $\overline{TU}$  and  $\overline{WV}$ . What is the measure, in degrees, of  $\angle WTU$ ? (Disregard the degree symbol when gridding your answer.)



/	○	○	○	○
.	○	○	○	○
0	○	○	○	○
1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4.	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○
0	○	○	○	○

19.) The expression  $(5032 + 15s^2) + 20(4s^2 - 55)$  can be written in the form  $as^2 + b$ , where  $a$  and  $b$  are constants. What is the value of  $a + b$  ?

/	○	○	○	○
.	○	○	○	○
0	○	○	○	○
1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4.	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○
0	○	○	○	○

20.) The graph of a line in the  $xy$ -plane has an  $x$ -intercept at  $(6,0)$  and passes through the point  $(12,-1)$ . If the  $y$ -intercept of the line is located at  $(0,c)$ , what is the value of  $c$ ?

/	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Practice Test – With Calculator

55 minutes, 38 questions

**Directions:** This activity is designed to help you practice your strategy for section 4 of the SAT: the Calculator Math section. Make sure you will have 55 uninterrupted minutes to complete the activity. Remember to practice these strategies while taking the test:

- Start at the beginning, and do not rush the easy questions.
- Around question 20, skip ahead to the grid-ins.
- If you run out of time, guess on any remaining multiple choice questions.
- Read each question three times:
  - (1) scan to make a plan.
  - (2) read carefully to unpack the data.
  - \* solve the problem \*
  - (3) read one more time to make sure you didn't fall for traps.
- Bubble in your answers at the end of each two-page spread.

Unlike the last section, you can use a calculator. For the ideal practice experience, use the same calculator you plan to take with you on Test Day.

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1.) Which of the options is equivalent to the expression shown below?

$$(2a^2 - 3) - (-4a^2 - 1)$$

- A)  $-2a^2 - 2$
- B)  $-2a^2 - 4$
- C)  $6a^2 - 2$
- D)  $6a^2 - 4$

2.) The table below shows the kinds of fish that are sold at a small grocery store. What fraction of the fresh fish is tuna?

	Fresh	Canned	Total
Tuna	8	32	40
Salmon	24	5	29
Total	32	37	69

- A)  $\frac{8}{69}$
- B)  $\frac{32}{69}$
- C)  $\frac{40}{69}$
- D)  $\frac{1}{4}$

3.) A political researcher selected 500 people at random from a group of people who had voted for a certain candidate four years earlier. A policy idea about environmental conservation was presented to this group. Of those who heard the presentation, 90% said they approved of the idea. Which of the following inferences can appropriately be drawn from this result?

- A) Most people who voted for the candidate four years ago will approve of the policy.
- B) Most people who learn about this policy will approve of it.
- C) At least 90% of people who voted for the candidate four years ago will approve of the policy.
- D) At least 90% of people who learn about this policy will approve of it.

4.) It takes at least 117 square inches of Aluminum foil to cover a baking pan. What is the maximum number of baking pans of this size that can be covered with 200 square feet of Aluminum foil? (1 square foot = 144 square inches)

- A) 84
- B) 162
- C) 246
- D) 1950

5.) In the equation  $(ax - 6)^2 = 25$ ,  $a$  is a constant. If  $x = -5$  is one solution to the equation, what is a possible value of  $a$ ?

- A)  $-\frac{31}{5}$
- B)  $-\frac{52}{25}$
- C)  $-\frac{1}{5}$
- D)  $\frac{4}{5}$

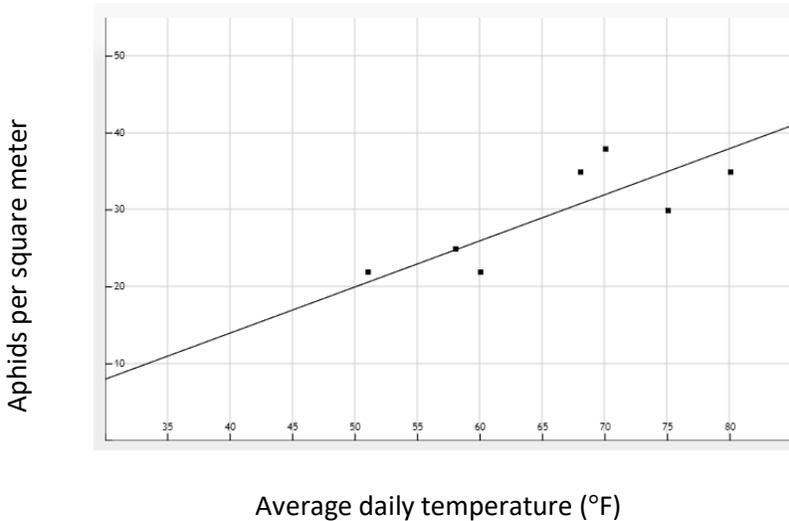
6.) Which of the following ordered pairs  $(x, y)$  satisfies the inequality  $2x + 7y > 4$  ?

- I.  $(-2, 2)$
- II.  $(0, 2)$
- III.  $(2, 0)$

- A) I and II only
- B) I and III only
- C) II and III only
- D) I, II, and III

Questions 7 and 8 refer to the following information:

Population of aphids in several climates



The scatterplot above displays the research of a biologist studying aphids in several different climates. This researcher counted the number of aphids in a square meter and the average daily temperature, in degrees Fahrenheit, for that location. The line of best fit is also shown.

7.) According to the scatterplot, which of the following statements is true about the relationship between the average daily temperature and the number of aphids observed by the biologist?

- A) The number of aphids is unrelated to the average daily temperature.
- B) Locations with a high quantity of aphids tend to have low temperatures.
- C) Locations with higher temperatures tend to have a lower quantity of aphids.
- D) Locations with higher temperatures tend to have a higher quantity of aphids.

8.) Another biologist plans to count the number of aphids in a location with an average daily temperature of 60°F. According to the line of best fit, which of the following best approximates the number of aphids per square meter that the biologist can expect to find?

- A) 22
- B) 26
- C) 30
- D) 100

9.) Rebecca visited an amusement park for 12 hours last Tuesday. She spent 25% of that time waiting in lines. How many minutes did Rebecca spend waiting in lines at the amusement park?

- A) 3
- B) 9
- C) 15
- D) 180

10.) Based on the equation  $8rs - 8t + 5 = 29$ , what is the value of  $rs - t$ ?

- A) 3
- B) 4.25
- C) 8
- D) 16

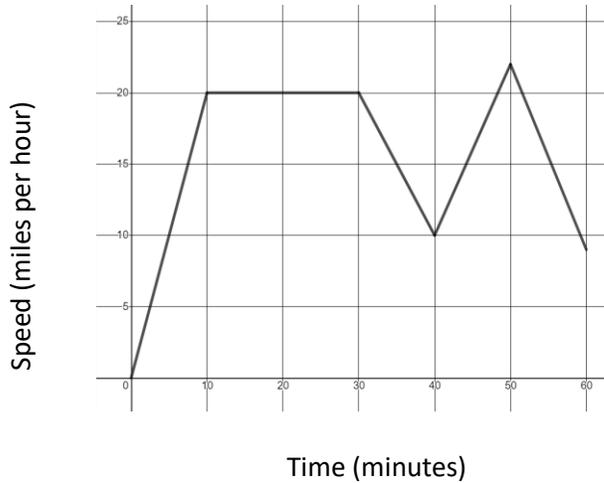
11.) Zainab paid \$135.00 for a pair of boots after a 7% sales tax was added. To the nearest cent, what was the price of the boots before the sales tax was added?

- A) \$94.50
- B) \$125.55
- C) \$126.17
- D) \$144.45

12.) A donut factory produces boxes of mini donuts, which have a volume of 96 cubic inches and boxes of regular donuts, which have a volume of 192 cubic inches. The factory receives an order for 80 boxes, and the total volume to be shipped is 3,840 cubic inches. Which of the following systems of equations can be used to determine the number of boxes of mini donuts,  $m$ , and the number of boxes of regular donuts,  $r$ , that were ordered?

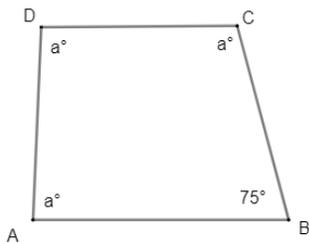
- A)  $r - m = 80$   
 $96m + 192r = 3,840$
- B)  $m - r = 80$   
 $192m + 96r = 3,840$
- C)  $r = 80 - m$   
 $192m + 96r = 3,840$
- D)  $m = 80 - r$   
 $96m + 192r = 3,840$

13.) Eddie rode his bike for a fundraiser, and his time and speed for the first 60 minutes of his ride are shown on the graph below. According to the graph, which of the following statements is NOT true concerning Eddie's bike ride?



- A) Eddie's speed reached its maximum during the final 20 minutes of his ride.
- B) Eddie's speed increased at a constant rate for the first 10 minutes of his ride.
- C) Eddie's speed remained constant for 20 minutes.
- D) Eddie's speed was increasing for a longer time than it was decreasing.

14.) In the figure below, what is the value of  $a$ ?



Not drawn to scale

- A) 90
- B) 95
- C) 100
- D) 105

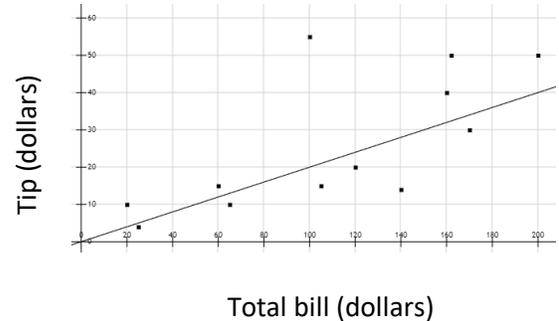
15.) If  $2h+k=28$  and  $\frac{k}{3}=6$ , what is the value of  $h+k$ ?

- A) 5
- B) 15
- C) 18
- D) 23

16.) Yesterday Kaitlyn spent  $3\frac{1}{2}$  hours reading a book. If she was able to read 105 pages yesterday and she wants to read 84 pages today at the same rate, how many hours must she spend reading today?

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

17.) The scatterplot below shows data for 12 different customers about the total bill at a restaurant and the amount of tip that was paid. For the customer that left the largest tip, which of the following options is closest to the difference between the actual tip and the tip predicted by the line of best fit?



- A) 10
- B) 20
- C) 35
- D) 55

18.) The equation below models the total cost,  $y$ , in dollars, that an office supply store charges to rent a photocopy machine for one month and copy  $x$  pages. The total cost consists of a flat fee for the month plus a charge for the number of copies made. When the equation is graphed in the  $xy$ -plane, what does the  $y$ -intercept of the graph represent in terms of the model?

$$y = 49.99 + .015x$$

- A) Total monthly charges of just over \$50.00
- B) A charge of \$49.99 per day rented
- C) A charge of \$0.015 per page copied
- D) A flat fee of \$49.99

**Questions 19 and 20 refer to the following information:**

A large department store works with two different efficiency consultants to make decisions concerning the amount of time their customers need to wait in lines. Each consultant uses a different formula to estimate the average amount of time a customer will wait in line,  $W$ , based on the average number of customers in the store,  $L$ , and the number of cashiers,  $C$ .

ABC Consultants: 
$$W = \frac{L+3}{20}$$

Business Pros: 
$$W = \frac{\sqrt{LC}}{25}$$

19.) Based on ABC Consultants' formula, what is  $L$  in terms of  $W$ ?

- A)  $L = \frac{W+3}{20}$
- B)  $L = 20W - 3$
- C)  $L = 20(W - 3)$
- D)  $L = 20W + 60$

20.) If the formulas give the same estimate for  $W$ , which of the following expressions is equivalent to  $\sqrt{LC}$ ?

- A)  $\frac{L+3}{500}$
- B)  $25(L+3)$
- C)  $\frac{5L+15}{4}$
- D)  $\frac{5(L+3)^2}{4}$

21.) A survey was given to the residents of the nation's 50 largest cities asking if they owned a car. The results from 7 of the cities are shown in the table below. The median percent of residents who reported owning a car for all 50 cities was 25.35%. What is the difference between the median percent of the residents who reported owning a car in the 7 cities listed in the table and the median for all 50 cities?

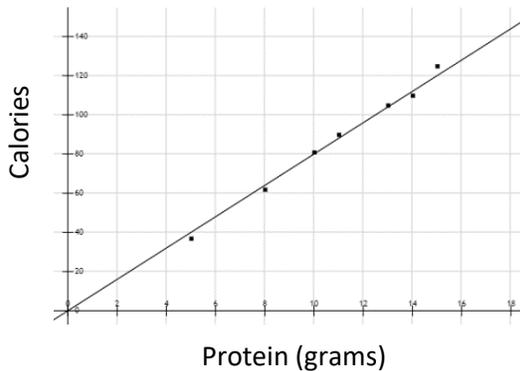
Percent of residents who own a car

City	Percent of residents
City 1	16.5%
City 2	30.2%
City 3	29.7%
City 4	26.9%
City 5	19.4%
City 6	26.7%
City 7	22.8%

- A) 0.05%
- B) 0.75%
- C) 1.35%
- D) 4.35%

22.) The scatter plot below shows the number of calories and the grams of protein in one serving of seven different brands of yogurt. The line of best fit for the data is also shown. According to the line of best fit, which of the following is closest to the predicted increase in calories for every increase of one gram of protein?

Total protein and total calories in one serving of yogurt



- A) 8.0
- B) 9.0
- C) 10.0
- D) 11.0

23.) The function below models the height  $h$ , in meters above the ground, of a projectile  $t$  seconds after being launched into the air. What does the number 54 represent in this function?

$$h(t) = -9.8t^2 + 83t + 54$$

- A) The time, in seconds, after which the projectile reaches the ground
- B) The initial speed, in meters per second, of the projectile
- C) The maximum height, in meters, of the projectile
- D) The initial height, in meters, of the projectile

24.) A cylindrical barrel containing gravel is filled to the top with water before being sealed. The base of the barrel has an area of 804 square inches and the height of the barrel is 40 inches. If 7160 cubic inches of water are needed to fill the barrel, which of the following is closest to the volume of the gravel, in cubic inches?

- A) 2835 in<sup>3</sup>
- B) 8004 in<sup>3</sup>
- C) 25,000 in<sup>3</sup>
- D) 39,320 in<sup>3</sup>

Questions 25 and 26 refer to the following information.

Concrete is formed from a mixture of gravel, sand, cement, and water. The following table shows how much of each item should be used when making concrete, in liters and cubic feet. The table also shows how many kilograms there are in one bucket full of each component.

Component	Liters	Cubic Feet	Kilograms per bucket
Gravel	6.0	0.24	4.0
Sand	4.0	0.16	4.0
Cement	2.5	0.10	2.0
Water	1.5	0.06	1.0

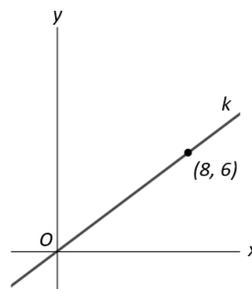
25.) If  $x$  liters is equivalent to  $c$  cubic feet, of the following, which best represents the relationship between  $x$  and  $c$ ?

- A)  $x = 25c$
- B)  $x = 0.04c$
- C)  $c = 25x$
- D)  $\frac{x}{c} = 0.04$

26.) If  $g$  buckets of gravel,  $s$  buckets of sand,  $c$  buckets of cement, and  $w$  buckets of water are mixed to form 88 kilograms of concrete, which of the following expresses  $s$  in terms of  $g$ ,  $c$ , and  $w$ ?

- A)  $s = 22 - g + \frac{2c - w}{4}$
- B)  $s = 22 - g - \frac{2c + w}{4}$
- C)  $s = 22 + g + \frac{2c + w}{4}$
- D)  $s = 22 - g - \frac{2c - w}{4}$

27.) In the  $xy$ -plane, a point (not shown) with coordinates  $(a, b)$  lies on the graph of line  $k$ . If  $a$  and  $b$  are positive integers, what is the ratio of  $b$  to  $a$ ?



- A) 2 to 3
- B) 3 to 2
- C) 3 to 4
- D) 4 to 3

28.) The number of bacteria on a food sample in a biology lab grows at an average rate of 2.1 percent per minute. A scientist begins an experiment with a food sample that has 4.7 million cells of bacteria. Which of the following functions represents the number of bacteria cells,  $C$ , in millions of cells,  $t$  minutes from the beginning of the experiment?

- A)  $C(t) = 4.7(1.021)^t$
- B)  $C(t) = 4.7(2.1)^t$
- C)  $C(t) = 1.21t + 4.7$
- D)  $C(t) = 1.021t + 4.7$

29.) The president of an online university received the following report on the number of new enrollments in 2019 and 2020. He estimated that the percent increase in new enrollments between 2020 and 2021 would be twice as large as the percent increase between 2019 and 2020. How many new enrollments does the university president expect for 2021?

Year	New Enrollments
2019	2,900
2020	3,770

- A) 4901
- B) 5510
- C) 6032
- D) 9802

30.) A circle in the  $xy$ -plane has the equation  $(x - 3)^2 + (y + 1)^2 = 16$ . Which of the following points does NOT lie in the interior of the circle?

- A) (-3, 2)
- B) (0, -1)
- C) (2, -3)
- D) (4, 1)

For questions 31-38, solve the problem and enter you answer into the provided grid.

31.) An architect makes a scale drawing of his client's current house. Every one-foot measurement of the house is represented by 0.5 inches in the drawing. If the architect's drawing of the living room has a perimeter of 30 inches, what is the perimeter of the actual living room in feet?

/	○	○	○	○
.	○	○	○	○
0	○	○	○	○
1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4.	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○
0	○	○	○	○

32.) Mr. Smith is a teacher who has an unusual way of grading quizzes. He calculates the grade by subtracting two times the number of incorrect answers from three times the number of correct answers. One of Mr. Smith's students took a quiz with 25 questions and received a score of 55. If the student answered every question, how many questions did the student answer correctly?

/	○	○	○	○
.	○	○	○	○
0	○	○	○	○
1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4.	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○
0	○	○	○	○

33.) Line  $r$  passes through the points  $\left(0, -\frac{4}{5}\right)$ ,  $\left(\frac{1}{2}, -\frac{1}{20}\right)$ , and  $\left(\frac{2}{5}, -\frac{1}{5}\right)$ . What is the slope of line  $r$ ?

/	○	○	○	○
.	○	○	○	○
0	○	○	○	○
1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4.	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○
0	○	○	○	○

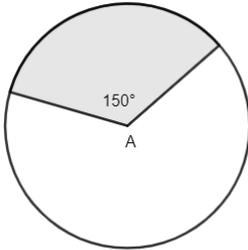
34.) If the ordered pair  $(x, y)$  satisfies the system of equations below, what is one possible value of  $y$ ?

$$y = x^2 - 9x + 23$$

$$y = 8 - x$$

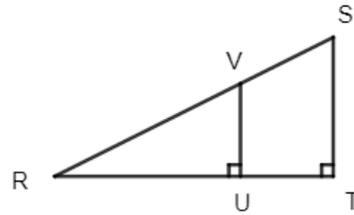
/	○	○	○	○
.	○	○	○	○
0	○	○	○	○
1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4.	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○
0	○	○	○	○

35.) Point A is the center of the circle shown below. What fraction of the area of the circle is the area of the shaded region?



/	○	○	○	○
.	○	○	○	○
0	○	○	○	○
1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○
0	○	○	○	○

36.) In the figure below,  $\angle T$  and  $\angle U$  are right angles and  $\tan R = \frac{5}{12}$ . If  $RS = 39$  and  $UT = 12$ , what is the length of  $\overline{ST}$ ?



/	○	○	○	○
.	○	○	○	○
0	○	○	○	○
1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○
0	○	○	○	○

Questions 37 and 38 refer to the following information.

Ms. Evans gave a four-question quiz to her class of 30 students on Monday, Tuesday, and Wednesday. The table below gives the number of students who answered 0, 1, 2, 3, and 4 questions correctly on each day. Each of the 30 students took all three quizzes.

# Questions answered correctly	0	1	2	3	4	Total
Monday's Quiz	0	1	4	10	15	30
Tuesday's Quiz	2	1	5	12	10	30
Wednesday's Quiz	1	4	2	11	12	30
Total	3	6	11	33	37	90

37.) What was the mean score on Monday's Quiz?

/	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

38.) None of Ms. Evans' students got the same score on two different days. If one of her students is selected at random, what is the probability that the student received a score of 2 on Tuesday or Wednesday, given that the student received a score of 2 on one of the three days?

/	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# Answer Key

## No Calculator Section:

- 1.) B
- 2.) C
- 3.) D
- 4.) A
- 5.) C
- 6.) A
- 7.) D
- 8.) B
- 9.) C
- 10.) A
- 11.) C
- 12.) D
- 13.) C
- 14.) A
- 15.) D
- 16.) 3
- 17.) 92.5
- 18.) 7
- 19.) 4027
- 20.) 1

## With Calculator Section:

- 1.) C
- 2.) D
- 3.) A
- 4.) C
- 5.) C
- 6.) A
- 7.) D
- 8.) B
- 9.) D
- 10.) A
- 11.) C
- 12.) D
- 13.) D
- 14.) B
- 15.) D
- 16.) C
- 17.) C
- 18.) D
- 19.) B
- 20.) C
- 21.) C
- 22.) A
- 23.) D
- 24.) C
- 25.) A
- 26.) B

- 27.) C
- 28.) A
- 29.) C
- 30.) A
- 31.) 60
- 32.) 21
- 33.)  $\frac{3}{2}$  or 1.5
- 34.) 3 or 5
- 35.)  $\frac{5}{12}$  or 0.42 or .417
- 36.) 15
- 37.) 3.3
- 38.)  $\frac{7}{11}$  or 0.636 or .6364

## Scoring your practice test

Great job finishing the sample SAT Math test! If you haven't already, compare your answers to the answer key, and add up your number of correct answers for both sections. This number is your raw score. Since there are 20 questions in the "no calculator" section and 38 questions in the "with calculator" section, you can get a maximum raw score of 58. Next, use the table below to convert your raw score into a scaled score. Keep in mind this table is only for this practice test. Since every version of the SAT has a slightly different difficulty level, each test will have a slightly different table to convert raw score to scaled score.

Raw Score	Scaled Score
58	800
57	790
56	780
55	770
54	750
53	740
52	730
51	710
50	700
49	690
48	690
47	680
46	670
45	660
44	650
43	640
42	630
41	620
40	610
39	600
38	600
37	590
36	580
35	570
34	560
33	560
32	550
31	540
30	540

Raw Score	Scaled Score
29	530
28	520
27	520
26	510
25	500
24	490
23	480
22	470
21	460
20	450
19	440
18	440
17	430
16	410
15	400
14	390
13	380
12	370
11	360
10	340
9	330
8	320
7	310
6	300
5	280
4	270
3	250
2	220
1	200