5 Full-Length ACT Math Practice Tests

The Practice You Need to Ace the ACT Math Test

2019

Reza Nazari & Ava Ross

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The Practice You Need to Ace the ACT

Math Test

By

Reza Nazari & Ava Ross

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Description

5 Full-Length ACT Math Practice Tests, which reflects the 2019 and 2020 test guidelines and topics, is designed to help you hone your math skills, overcome your exam anxiety, and boost your confidence -- and do your best to ace the ACT Math Test. The realistic and full-length ACT Math tests show you how the test is structured and what math topics you need to master. The practice test questions are followed by answer explanations to help you find your weak areas, learn from your mistakes, and raise your ACT Math score.

The surest way to succeed on ACT Math Test is with intensive practice in every math topic tested-- and that's what you will get in ***5 Full-Length ACT Math Practice Tests***. This ACT Math new edition has been updated to replicate questions appearing on the most recent ACT Math tests. This is a precious learning tool for ACT Math test takers who need extra practice in math to improve their ACT Math score. After taking the ACT Math practice tests in this book, you will have solid foundation and adequate practice that is necessary to succeed on the ACT Math test. **This book is your ticket to ace the ACT Math Test!**

5 Full-Length ACT Math Practice Tests contains many exciting and unique features to help you improve your test scores, including:

- Content 100% aligned with the 2019 - 2020 ACT Math test
- Written by ACT Math tutors and test experts
- Complete coverage of all ACT Math concepts and topics which you will be tested
- Detailed answers and explanations for every ACT Math practice questions to help you learn from your mistakes
- 5 full-length practice tests (featuring new question types) with detailed answers

This ACT Math book and other Effortless Math Education books are used by thousands of students each year to help them review core content areas, brush-up in math, discover their strengths and weaknesses, and achieve their best scores on the ACT test.

About the Author

Reza Nazari is the author of more than 100 Math learning books including:
– Math and Critical Thinking Challenges: For the Middle and High School Student
– GRE Math in 30 Days
– ASVAB Math Workbook 2018 - 2019
– Effortless Math Education Workbooks
– and many more Mathematics books …

Reza is also an experienced Math instructor and a test–prep expert who has been tutoring students since 2008. Reza is the founder of Effortless Math Education, a tutoring company that has helped many students raise their standardized test scores—and attend the colleges of their dreams. Reza provides an individualized custom learning plan and the personalized attention that makes a difference in how students view math.

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ACT Test Review

Since 1959, the American College Testing Organization (ACT) has been judging student's potential regarding academics. ACT is a standardized test used for college admissions in the United States. In essence, it is a broad and quick assessment of students' academic abilities.

The ACT is divided into four major segments.

- English
- Reading
- Mathematics
- Science

The ACT also includes an optional 40-minute Writing Test.

In an ACT assessment test all questions are weighted the same. You also have to keep in mind that the more difficult questions are randomly thrown around in the test. You can choose to skip over the more challenging tasks and ace out the simpler questions in the tests first.

There are 60 Mathematics questions on ACT and students have 60 minutes to answer the questions. The Mathematics section of the ACT contains multiple choice questions. ACT permits the use of personal calculators on the Math portion of the test.

ACT Mathematics cover the following topics:

- Pre-Algebra (20-25%)
- Elementary Algebra (15-20%)
- Intermediate Algebra (15-20%)
- Coordinate Geometry (15-20%)
- Plane Geometry (20-25%)
- Trigonometry (5-10%)

In this book, there are five complete ACT Math Tests. Take these tests to see what score you'll be able to receive on a real ACT Math test.

Good luck!

Time to Test

Time to refine your quantitative reasoning skill with a practice test

Take an ACT Math test to simulate the test day experience. After you've finished, score your test using the answer keys.

Before You Start

- You'll need a pencil, a calculator and a timer to take the test.
- For each question, there are five possible answers. Choose which one is best.
- It's okay to guess. There is no penalty for wrong answers.
- Use the answer sheet provided to record your answers.
- After you've finished the test, review the answer key to see where you went wrong.

Good Luck!

ACT Math
Practice Test 1

2019 - 2020

Total number of questions: 60

Total time: 60 Minutes

Calculator is permitted for ACT Math Test.

ACT Mathematics Practice Test Answer Sheet

Remove (or photocopy) this answer sheet and use it to complete the practice test.

ACT Mathematics Practice Test 1 Answer Sheet															
1	A	B	C	D	E	21	A	B	C	D	E	41	A	B	C	D	E
2	A	B	C	D	E	22	A	B	C	D	E	42	A	B	C	D	E
3	A	B	C	D	E	23	A	B	C	D	E	43	A	B	C	D	E
4	A	B	C	D	E	24	A	B	C	D	E	44	A	B	C	D	E
5	A	B	C	D	E	25	A	B	C	D	E	45	A	B	C	D	E
6	A	B	C	D	E	26	A	B	C	D	E	46	A	B	C	D	E
7	A	B	C	D	E	27	A	B	C	D	E	47	A	B	C	D	E
8	A	B	C	D	E	28	A	B	C	D	E	48	A	B	C	D	E
9	A	B	C	D	E	29	A	B	C	D	E	49	A	B	C	D	E
10	A	B	C	D	E	30	A	B	C	D	E	50	A	B	C	D	E
11	A	B	C	D	E	31	A	B	C	D	E	51	A	B	C	D	E
12	A	B	C	D	E	32	A	B	C	D	E	52	A	B	C	D	E
13	A	B	C	D	E	33	A	B	C	D	E	53	A	B	C	D	E
14	A	B	C	D	E	34	A	B	C	D	E	54	A	B	C	D	E
15	A	B	C	D	E	35	A	B	C	D	E	55	A	B	C	D	E
16	A	B	C	D	E	36	A	B	C	D	E	56	A	B	C	D	E
17	A	B	C	D	E	37	A	B	C	D	E	57	A	B	C	D	E
18	A	B	C	D	E	38	A	B	C	D	E	58	A	B	C	D	E
19	A	B	C	D	E	39	A	B	C	D	E	59	A	B	C	D	E
20	A	B	C	D	E	40	A	B	C	D	E	60	A	B	C	D	E

1) In five successive hours, a car traveled $40\ km, 45\ km, 50\ km, 35\ km$ and $55\ km$. In the next five hours, it traveled with an average speed of $65\ km\ per\ hour$. Find the total distance the car traveled in 10 hours.
   A. $425\ km$
   B. $450\ km$
   C. $550\ km$
   D. $600\ km$
   E. $1{,}000\ km$

2) How long does a 420–miles trip take moving at 65 miles per hour (mph)?
   A. $4\ hours$
   B. $6\ hours\ and\ 24\ minutes$
   C. $8\ hours\ and\ 24\ minutes$
   D. $8\ hours\ and\ 30\ minutes$
   E. $10\ hours\ and\ 30\ minutes$

3) Right triangle ABC has two legs of lengths $5\ cm$ (AB) and $12\ cm$ (AC). What is the length of the third side (BC)?
   A. $4\ cm$
   B. $6\ cm$
   C. $8\ cm$
   D. $13\ cm$
   E. $20\ cm$

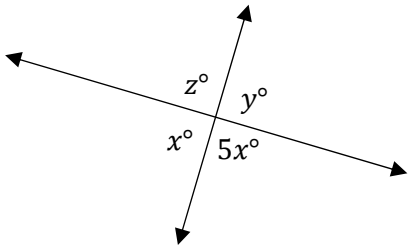
4) The ratio of boys to girls in a school is $2:3$. If there are 500 students in a school, how many boys are in the school?
   A. 540
   B. 360
   C. 300
   D. 280
   E. 200

5) $(7x + 2y)(5x + 2y) = ?$
   A. $2x^2 + 14xy + 2y^2$
   B. $2x^2 + 4xy + 2y^2$
   C. $7x^2 + 14xy + y^2$
   D. $10x^2 + 14xy + 4y$
   E. $35x^2 + 24xy + 4y^2$

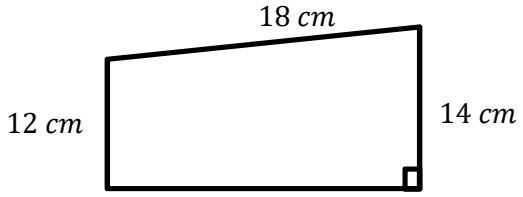
6) Which of the following expressions is equivalent to $5x\ (4 + 2y)$?
   A. $x + 10xy$
   B. $5x + 5xy$
   C. $20xy + 2xy$
   D. $20x + 5xy$
   E. $20x + 10xy$

7) If $y = 5ab + 3b^3$, what is y when $a = 2$ and $b = 3$?
   A. 24
   B. 31
   C. 36
   D. 51
   E. 111

8) From the figure, which of the following must be true? (figure not drawn to scale)
   A. $y = z$
   B. $y = 5x$
   C. $y \geq x$
   D. $y + 4x = z$
   E. $y > x$



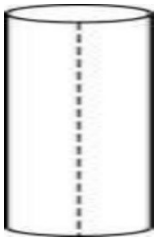
9) The perimeter of the trapezoid below is 64. What is its area?
   A. $252\ cm^2$
   B. $234\ cm^2$
   C. $216\ cm^2$
   D. $154\ cm^2$
   E. $260\ cm^2$



10) Two third of 15 is equal to $\frac{2}{5}$ of what number?
   A. 12
   B. 20
   C. 25
   D. 60
   E. 90

11) The marked price of a computer is D dollar. Its price decreased by 25% in January and later increased by 10% in February. What is the final price of the computer in D dollar?
   A. $0.80\ D$
   B. $0.82\ D$
   C. $0.90\ D$
   D. $1.20\ D$
   E. $1.40\ D$

12) The radius of the following cylinder is 8 inches and its height is 14 inches. What is the surface area of the cylinder?



A. $64\ \pi\ in^2$
B. $128\ \pi\ in^2$
C. $192\ \pi in^2$
D. $256\ \pi\ in^2$
E. $352\ \pi in^2$

13) The average of $13, 15, 20$ and x is 20. What is the value of x?
A. 9
B. 15
C. 18
D. 20
E. 32

14) The price of a sofa is decreased by 25% to $\$450$. What was its original price?
A. $\$480$
B. $\$520$
C. $\$560$
D. $\$600$
E. $\$800$

15) The area of a circle is $49\ \pi$. What is the circumference of the circle?
A. $7\ \pi$
B. $14\ \pi$
C. $32\ \pi$
D. $64\ \pi$
E. $124\ \pi$

16) A $\$50$ shirt now selling for $\$28$ is discounted by what percent?
A. 20%
B. 44%
C. 54%
D. 60%
E. 80%

17) In 1999, the average worker's income increased $\$2{,}000$ per year starting from $\$26{,}000$ annual salary. Which equation represents income greater than average? ($I =$ income, $x =$ number of years after 1999)
A. $I > 2000\ x\ + 26000$
B. $I > -2000\ x\ + 26000$
C. $I < -2000\ x\ +\ 26000$
D. $I < 2000\ x - 26000$
E. $I < 24{,}000\ x + 26000$

18) A boat sails 60 miles south and then 80 miles east. How far is the boat from its start point?
   A. $45\ miles$
   B. $50\ miles$
   C. $60\ miles$
   D. $70\ miles$
   E. $100\ miles$

19) Sophia purchased a sofa for $\$530.40$. The sofa is regularly priced at $\$631$. What was the percent discount Sophia received on the sofa?
   A. 12%
   B. 16%
   C. 20%
   D. 25%
   E. 40%

20) The score of Emma was half as that of Ava and the score of Mia was twice that of Ava. If the score of Mia was 40, what is the score of Emma?
   A. 10
   B. 15
   C. 20
   D. 30
   E. 40

21) A bag contains 18 balls: two green, five black, eight blue, a brown, a red and one white. If 17 balls are removed from the bag at random, what is the probability that a brown ball has been removed?
   A. $\frac{1}{9}$
   B. $\frac{1}{6}$
   C. $\frac{16}{18}$
   D. $\frac{17}{18}$
   E. $\frac{1}{2}$

22) The average of five consecutive numbers is 36. What is the smallest number?
   A. 38
   B. 36
   C. 34
   D. 12
   E. 8

23) The price of a car was $\$28{,}000$ in 2012. In 2013, the price of that car was $\$18{,}200$. What was the rate of depreciation of the price of car per year?

A. 20%
B. 30%
C. 35%
D. 40%
E. 50%

24) The width of a box is one third of its length. The height of the box is one third of its width. If the length of the box is $36\ cm$, what is the volume of the box?

A. $81\ cm^3$
B. $162\ cm^3$
C. $243\ cm^3$
D. $1{,}728\ cm^3$
E. $1{,}880\ cm^3$

25) A tree 32 feet tall casts a shadow 12 feet long. Jack is 6 feet tall. How long is Jack's shadow?

A. $2.25\ feet$
B. $4\ feet$
C. $4.25\ feet$
D. $8\ feet$
E. $12\ feet$

26) When a number is subtracted from 28 and the difference is divided by that number, the result is 3. What is the value of the number?

A. 2
B. 4
C. 7
D. 12
E. 24

27) An angle is equal to one ninth of its supplement. What is the measure of that angle?

A. 9
B. 18
C. 25
D. 60
E. 90

28) John traveled $150\ km$ in 6 hours and Alice traveled $140\ km$ in 4 hours. What is the ratio of the average speed of John to average speed of Alice?

A. $3:2$
B. $2:3$
C. $5:7$
D. $5:6$
E. $11:16$

29) If $tan\ \theta = \frac{5}{12}$ and $sin\ \theta > 0$, then $cos\ \theta = ?$

A. $-\frac{5}{13}$
B. $\frac{12}{13}$
C. $\frac{13}{12}$
D. $-\frac{12}{13}$
E. 0

30) Which of the following has the same period and two times the amplitude of graph $y = cos\ x$?

A. $y = cos\ 2x$
B. $y = cos\ (x + 2)$
C. $y = 4\cos 2x$
D. $y = 2 + 2\ cos\ x$
E. $y = 4 + cos\ x$

31) A rope weighs 600 grams per meter of length. What is the weight in kilograms of 14.2 meters of this rope? ($1\ kilograms = 1{,}000\ grams$)

A. 0.0852
B. 0.852
C. 8.52
D. $8{,}520$
E. $85{,}200$

32) A chemical solution contains 6% alcohol. If there is $24\ ml$ of alcohol, what is the volume of the solution?

A. $240\ ml$
B. $400\ ml$
C. $600\ ml$
D. $1{,}200\ ml$
E. $2{,}400\ ml$

33) The average weight of 18 girls in a class is $56\ kg$ and the average weight of 32 boys in the same class is $62\ kg$. What is the average weight of all the 50 students in that class?

A. 50
B. 59.84
C. 61.68
D. 61.90
E. 62.20

34) The price of a laptop is decreased by 20% to $\$360$. What is its original price?

A. $\$320$
B. $\$380$
C. $\$400$
D. $\$450$
E. $\$500$

35) A bank is offering 4.5% simple interest on a savings account. If you deposit $\$9{,}000$, how much interest will you earn in five years?

A. $\$360$
B. $\$720$
C. $\$2{,}025$
D. $\$3{,}600$
E. $\$4{,}800$

36) Multiply and write the product in scientific notation:

$$(2.9 \times 10^6) \times (2.6 \times 10^{-5})$$

A. 754×100
B. 75.4×10^6
C. 75.4×10^{-5}
D. 7.54×10^{11}
E. 7.54×10

37) If the height of a right pyramid is $14\ cm$ and its base is a square with side $6\ cm$. What is its volume?

A. $432\ cm^3$
B. $3088\ cm^3$
C. $236\ cm^3$
D. $172\ cm^3$
E. $168\ cm^3$

38) 5 less than twice a positive integer is 73. What is the integer?

A. 39
B. 41
C. 42
D. 44
E. 50

39) A shirt costing $\$300$ is discounted 15%. After a month, the shirt is discounted another 15%. Which of the following expressions can be used to find the selling price of the shirt?

A. $(300)\ (0.70)$
B. $(300) - 300\ (0.30)$
C. $(300)(0.15) - (300)\ (0.15)$
D. $(300)\ (0.85)(0.85)$
E. $(300)(0.85)(0.85) - (300)\ (0.15)$

40) Which of the following points lies on the line $2x + 4y = 8$?

A. $(2, 1)$
B. $(-1, 3)$
C. $(-2, 2)$
D. $(2, 2)$
E. $(2, 8)$

41) If $2x + 2y = 2$, $3x - y = 7$, which of the following ordered pairs (x, y) satisfies both equations?

A. $(1, 3)$
B. $(2, 4)$
C. $(2, -1)$
D. $(4, -6)$
E. $(1, -6)$

42) If $f(x) = 3x + 4(x + 1) + 2$ then $f(4x) =$?

A. $28x + 6$
B. $16x - 6$
C. $25x + 4$
D. $12x + 3$
E. $12x - 3$

43) A line in the xy-plane passes through origin and has a slope of $\frac{1}{3}$. Which of the following points lies on the line?

A. $(2,1)$
B. $(4,1)$
C. $(9,3)$
D. $(6,3)$
E. $(1,3)$

44) Which of the following is equivalent to $(3n^2 + 2n + 6) - (2n^2 - 4)$?

A. $n + 4n^2$
B. $n^2 - 3$
C. $n^2 + 2n + 10$
D. $n + 2$
E. $n - 2$

45) Solve for x: $4(x + 1) = 6(x - 4) + 20$

A. 12
B. 6.5
C. 4
D. 2
E. 0

46) If $x \neq -4$ and $x \neq 5$, which of the following is equivalent to $\frac{1}{\frac{1}{x-5}+\frac{1}{x+4}}$?

A. $\frac{(x-5)(x+4)}{(x-5)+(x+4)}$
B. $\frac{(x+4)+(x-5)}{(x+4)(x-5)}$
C. $\frac{(x+4)(x-5)}{(x+4)-(x+5)}$
D. $\frac{(x+4)+(x-5)}{(x+4)-(x-5)}$
E. $\frac{(x-4)+(x-5)}{(x+4)-(x-5)}$

$$y < c - x \, , \, y > x + b$$

47) In the xy-plane, if $(0, 0)$ is a solution to the system of inequalities above, which of the following relationships between c and b must be true?

A. $c < b$
B. $c > b$
C. $c = b$
D. $c = b + c$
E. $c = b - x$

48) What is the value of x in the following equation? $3x + 10 = 46$

A. 4
B. 7
C. 10
D. 12
E. 16

49) Calculate $f(5)$ for the following function f.

$$f(x) = x^2 - 3x$$

A. 5
B. 10
C. 15
D. 20
E. 25