

Math Study Log Instructions (**Study Log on next page**)

For clarity, scan the QR Code below to watch the tutorial video before reviewing the below instructions and subsequent pages.



- (1) Log the start and stop time of your study session.
- (2) Complete 3 sets each study period. (There are 5 problems in each set.)
- (3) Give yourself only 5 minutes and 30 seconds per set. (You may take minor breaks between sets if desired.)
- (4) Sum the total number of questions you got right out of all 3 sets.
- (5) Divide that number by 3.
- (6) Find the comparison number that your number is closest to. Beside that number is your projected score.
- (7) Make a note of the content areas that you missed. Identify those areas where you need more practice.
 - PA = Pre-Algebra
 - EA = Elem. Algebra
 - IA = Intermediate Algebra
 - CG = Coordinate Geometry
 - PG = Plane Geometry
 - TR = Trigonometry
 - ST = Statistics/Probability
- (8) Continue this process throughout camp to measure your progress, precision, and study needs for attaining your desired score in this subject area.

Comparison Number	Projected Score
1	9
1.5	14
2	18
2.5	22
3	24
3.5	27
4	30
4.5	34

Math Timed Study Log

Sets per Study Session	Questions per Set	Time per Set
3 sets	5 questions per set	5 min and 30 sec per set

Date	Start time	End time

Set	Number of Questions Correct	Tally of Content Area Questions Missed						
		Pre-Algebra (PA)	Elem. Algebra (EA)	Intermediate Algebra (IA)	Coordinate Geometry (CG)	Plane Geometry (PG)	Trigonometry (TR)	Statistics/Probability (ST)
#1								
#2								
#3								

Total/3 = Average Correct ___/3 = ___

Find the Comparison Number that is closest, and then identify your projected score.

Comparison Number	Projected Score
1	9
1.5	14
2	18
2.5	22
3	24
3.5	27
4	30
4.5	34

ACT Math Practice – Sets 1–3

SET 1 – ACT Math Practice

1. (PA) What is the value of $\frac{3}{4} + \frac{5}{6}$?
A. $\frac{19}{12}$
B. $\frac{29}{24}$
C. $\frac{13}{12}$
D. $\frac{7}{10}$
2. (EA) Solve for x : $5x - 7 = 18$
A. 3
B. 4
C. 5
D. 7
3. (CG) Point A(2,4) is translated 3 units right and 2 units down. What are the new coordinates?
A. (5,2)
B. (5,6)
C. (-1,2)
D. (5,-2)
4. (PG) A triangle has sides 8 cm and 6 cm with an included angle of 60° . What is the approximate area?
A. 12
B. 20.8
C. 24
D. 41.6
5. (TR) If $\sin(\theta) = \frac{3}{5}$ and θ is acute, what is $\cos(\theta)$?
A. $\frac{4}{5}$
B. $\frac{5}{3}$
C. $\frac{3}{4}$
D. $\frac{2}{5}$

SET 2 – ACT Math Practice

1. (PA) A store increases a \$40 item by 15%. What is the new price?
 - A. \$44
 - B. \$45
 - C. \$46
 - D. \$48

2. (IA) Solve: $x^2 - 9 = 0$
 - A. ± 2
 - B. ± 3
 - C. 3
 - D. -3

3. (CG) What is the slope of the line through (1,3) and (4,9)?
 - A. 1
 - B. 2
 - C. 3
 - D. 6

4. (PG) The radius of a circle is 7. What is its circumference?
 - A. 14π
 - B. 21π
 - C. 28π
 - D. 49π

5. (ST) A bag contains 5 red, 3 blue, and 2 green marbles. What is the probability of choosing a blue?
 - A. $3/10$
 - B. $1/4$
 - C. $2/5$
 - D. $3/5$

SET 3 – ACT Math Practice

1. (PA) Simplify: $2(3x - 5)$
 - A. $6x - 10$

- B. $5x - 3$
- C. $6x - 5$
- D. $6x - 15$

2. (EA) Solve: $x/4 = 7$

- A. 11
- B. 14
- C. 21
- D. 28

3. (PG) A rectangle has perimeter 54 and length 15. What is the width?

- A. 9
- B. 12
- C. 15
- D. 24

4. (CG) What is the distance between $(-3,4)$ and $(1,1)$?

- A. 3
- B. 4
- C. 5
- D. $\sqrt{20}$

5. (IA) If $f(x) = 2x^2 - x$, what is $f(3)$?

- A. 15
- B. 18
- C. 21
- D. 27

ACT Math Practice – Sets 4–6
SET 4 – ACT Math Practice

1. (EA) Solve: $3x + 8 = 20$
 - A. 3
 - B. 4
 - C. 5
 - D. 12

2. (ST) A number cube (1–6) is rolled. What is the probability of getting a number greater than 4?
 - A. $1/6$
 - B. $2/6$
 - C. $2/3$
 - D. $4/6$

3. (PG) Find the area of a triangle with base 12 and height 9.
 - A. 36
 - B. 48
 - C. 54
 - D. 72

4. (CG) The graph of $y = 2x - 3$ intersects the y-axis at:
 - A. -3
 - B. -2
 - C. 0
 - D. 3

5. (TR) What is $\tan 45^\circ$?
 - A. 0
 - B. 1
 - C. $\sqrt{2}$
 - D. $\sqrt{3}$

ANSWER KEY – SET 4

1. B (EA) $3x + 8 = 20 \rightarrow 3x = 12 \rightarrow x = 4$.
2. B (ST) Numbers greater than 4 are 5 and 6, so probability = $2/6 = 1/3$.
3. C (PG) Area = $(1/2) \cdot \text{base} \cdot \text{height} = (1/2) \cdot 12 \cdot 9 = 54$.
4. A (CG) The y-intercept is -3.
5. B (TR) $\tan 45^\circ = 1$.

SET 5 – ACT Math Practice

- (PA) What is 15% of 80?
 - 10
 - 12
 - 15
 - 18

- (EA) Solve for x : $7x - 4 = 24$
 - 2
 - 3
 - 4
 - 6

- (PG) A right triangle has legs of 9 and 12. What is the hypotenuse?
 - 14
 - 15
 - 17
 - 21

- (CG) What is the midpoint of $(-2, 6)$ and $(4, -2)$?
 - $(1, 2)$
 - $(1, 4)$
 - $(-1, 2)$
 - $(2, 1)$

- (IA) Solve: $x^2 - 3x - 10 = 0$
 - 5, -2
 - 2, -5
 - 10, -1
 - 3, -3

ANSWER KEY – SET 5

- B (PA) $0.15 \times 80 = 12$.
- C (EA) $7x - 4 = 24 \rightarrow 7x = 28 \rightarrow x = 4$.
- B (PG) Hypotenuse = $\sqrt{(9^2 + 12^2)} = \sqrt{(81 + 144)} = \sqrt{225} = 15$.
- A (CG) Midpoint = $((-2 + 4)/2, (6 + (-2))/2) = (2/2, 4/2) = (1, 2)$.
- A (IA) $x^2 - 3x - 10 = 0$ factors as $(x - 5)(x + 2) = 0 \rightarrow x = 5, -2$.

SET 6 – ACT Math Practice

1. (PA) Simplify: $4^2 - 3^2$

- A. 5
- B. 7
- C. 13
- D. 16

2. (EA) Solve: $(2/3)x = 10$

- A. 5
- B. 10
- C. 12
- D. 15

3. (PG) A circle has diameter 14. What is its area?

- A. 49π
- B. 98π
- C. 154π
- D. 196π

4. (CG) A line has slope 3 and passes through (2,1). Which equation is correct?

- A. $y = 3x + 1$
- B. $y = 3x - 5$
- C. $y = 3x - 2$
- D. $y = 2x + 3$

5. (TR) If $\cos(\theta) = 5/13$ and θ is acute, what is $\sin(\theta)$?

- A. $12/13$
- B. $5/12$
- C. $\sqrt{12/13}$
- D. $13/12$

ANSWER KEY – SET 6

1. B (PA) $4^2 - 3^2 = 16 - 9 = 7$.

2. D (EA) $(2/3)x = 10 \rightarrow x = 10 \cdot (3/2) = 15$.

3. A (PG) Radius = $14/2 = 7$, so area = $\pi \cdot 7^2 = 49\pi$.

4. B (CG) Using point-slope: $y - 1 = 3(x - 2) \rightarrow y = 3x - 5$.

5. A (TR) With $\cos = 5/13$ (adj=5, hyp=13), opp = $\sqrt{(13^2 - 5^2)} = 12$, so $\sin = 12/13$.

ACT Math Practice – Sets 7–9
SET 7 – ACT Math Practice

1. (PA) Evaluate: $\sqrt{64} + \sqrt{36}$
A. 10
B. 12
C. 14
D. 16
2. (IA) Solve for x : $x^2 = 121$
A. 11
B. -11
C. ± 11
D. 121
3. (PG) What is the area of a trapezoid with bases 5 and 9 and height 4?
A. 24
B. 26
C. 28
D. 32
4. (CG) Which of these represents a line perpendicular to $y = -1/3 x + 2$?
A. $y = 3x - 1$
B. $y = -3x + 5$
C. $y = 1/3 x + 4$
D. $y = -1/3 x - 7$
5. (ST) A class has 12 girls and 8 boys. One student is chosen at random. What is the probability the student is a boy?
A. $1/3$
B. $2/5$
C. $3/5$
D. $4/5$

ANSWER KEY – SET 7

1. C (PA) $\sqrt{64} = 8$ and $\sqrt{36} = 6$, so $8 + 6 = 14$.
2. C (IA) $x^2 = 121 \rightarrow x = \pm 11$.
3. C (PG) Area = $(1/2)(b_1 + b_2)h = (1/2)(5 + 9) \cdot 4 = (1/2)(14) \cdot 4 = 28$.
4. A (CG) A line perpendicular to slope $-1/3$ has slope 3. $y = 3x - 1$.
5. B (ST) 8 boys out of 20 total $\rightarrow 8/20 = 2/5$.

SET 8 – ACT Math Practice

1. (PA) A number increases from 50 to 65. What is the percent increase?

- A. 15%
- B. 20%
- C. 25%
- D. 30%

2. (EA) Solve for x : $9x + 2 = 29$

- A. 2
- B. 3
- C. 4
- D. 5

3. (PG) A cylinder has radius 3 and height 10. What is its volume?

- A. 30π
- B. 90π
- C. 180π
- D. 300π

4. (CG) Which point lies on the line $y = 2x + 1$?

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

5. (TR) If $\tan(\theta) = 4/3$ and θ is acute, what is $\sin(\theta)$?

- A. $3/5$
- B. $4/5$
- C. $5/4$
- D. $7/5$

ANSWER KEY – SET 8

1. D (PA) Increase = $65 - 50 = 15$; $15/50 = 0.30 = 30\%$.

2. B (EA) $9x + 2 = 29 \rightarrow 9x = 27 \rightarrow x = 3$.

3. B (PG) Volume = $\pi r^2 h = \pi \cdot 3^2 \cdot 10 = 90\pi$.

4. B (CG) For $x = 1$, $y = 2(1) + 1 = 3 \rightarrow (1,3)$.

5. B (TR) Right triangle with opp = 4, adj = 3, hyp = 5 $\rightarrow \sin(\theta) = 4/5$.

ACT Math Practice – Sets 10–12

SET 10 – ACT Math Practice

- (PA) 8 is what percent of 32?
 - 20%
 - 25%
 - 33.3%
 - 40%

- (EA) Solve for x : $4(x - 3) + 2 = 3x + 5$
 - 3
 - 5
 - 10
 - 15

- (PG) A rectangular prism has length 4 cm, width 3 cm, and height 5 cm. What is its volume?
 - 12 cm^3
 - 20 cm^3
 - 40 cm^3
 - 60 cm^3

- (ST) What is the mean (average) of the numbers 4, 7, 9, and 10?
 - 7
 - 7.5
 - 8
 - 8.5

- (CG) A line passes through the points (0, -2) and (3, 4). Which equation represents this line?
 - $y = 2x - 2$
 - $y = 2x + 2$
 - $y = -2x - 2$
 - $y = -2x + 4$

ANSWER KEY – SET 10

- B (PA) $8/32 = 1/4 = 0.25 = 25\%$.
- D (EA) $4(x - 3) + 2 = 3x + 5 \rightarrow 4x - 12 + 2 = 3x + 5 \rightarrow 4x - 10 = 3x + 5 \rightarrow x = 15$.
- D (PG) Volume = $lwh = 4 \cdot 3 \cdot 5 = 60 \text{ cm}^3$.
- B (ST) Mean = $(4 + 7 + 9 + 10) / 4 = 30 / 4 = 7.5$.
- A (CG) Slope = $(4 - (-2)) / (3 - 0) = 6 / 3 = 2$; using point (0, -2): $y = 2x - 2$.

SET 11 – ACT Math Practice

- (PA) Evaluate: $3^2 + 4 \cdot 5$
 - 23
 - 25
 - 29
 - 35
- (IA) Solve for x : $5 \cdot 2^x = 40$
 - 2
 - 3
 - 4
 - 5
- (PG) A triangle has side lengths 7, 24, and 25. What is the perimeter of the triangle?
 - 36
 - 49
 - 56
 - 60
- (CG) What is the distance between the points (1, -2) and (5, 1)?
 - 3
 - 4
 - 5
 - $\sqrt{34}$
- (ST) Two fair six-sided dice are rolled. What is the probability that the sum of the two dice is 7?
 - $1/12$
 - $1/9$
 - $1/6$
 - $1/3$

ANSWER KEY – SET 11

- C (PA) $3^2 = 9$, $4 \cdot 5 = 20$, so $9 + 20 = 29$.
- B (IA) $5 \cdot 2^x = 40 \rightarrow 2^x = 8 \rightarrow x = 3$.
- C (PG) Perimeter = $7 + 24 + 25 = 56$.
- C (CG) Distance = $\sqrt{[(5 - 1)^2 + (1 - (-2))^2]} = \sqrt{(4^2 + 3^2)} = \sqrt{(16 + 9)} = 5$.
- C (ST) There are 6 favorable outcomes out of 36 total $\rightarrow 6/36 = 1/6$.

SET 12 – ACT Math Practice

1. (EA) Solve the inequality: $3x - 7 < 11$

- A. $x > 6$
- B. $x < 6$
- C. $x \leq 6$
- D. $x \geq 6$

2. (IA) Simplify for $x \neq 3$: $(x^2 - 9) / (x - 3)$

- A. $x + 3$
- B. $x - 3$
- C. $x^2 + 3$
- D. $x^2 - 3$

3. (PG) What is the measure of each interior angle of a regular pentagon?

- A. 90°
- B. 100°
- C. 108°
- D. 120°

4. (TR) What is $\cos 30^\circ$?

- A. $1/2$
- B. $\sqrt{3}/2$
- C. $\sqrt{2}/2$
- D. $\sqrt{3}/3$

5. (CG) The graph of $y = x^2$ is shifted up 4 units. What is the equation of the new graph?

- A. $y = x^2 + 4$
- B. $y = x^2 - 4$
- C. $y = (x + 4)^2$
- D. $y = (x - 4)^2$

ANSWER KEY – SET 12

1. B (EA) $3x - 7 < 11 \rightarrow 3x < 18 \rightarrow x < 6$.

2. A (IA) $x^2 - 9 = (x - 3)(x + 3)$; dividing by $(x - 3)$ gives $x + 3$ (for $x \neq 3$).

3. C (PG) Interior angle of a regular n-gon: $[(n - 2) \cdot 180^\circ] / n$; for $n = 5$: $(3 \cdot 180^\circ) / 5 = 540^\circ / 5 = 108^\circ$.

4. B (TR) $\cos 30^\circ = \sqrt{3}/2$.

5. A (CG) Shifting $y = x^2$ up 4 units gives $y = x^2 + 4$.