JUNIOR COLLEGE MATH MASTERY GUIDE College Preparatory Mathematics

Global Sovereign University

"Building a Bridge to Freedom Through Education—Not Handouts"

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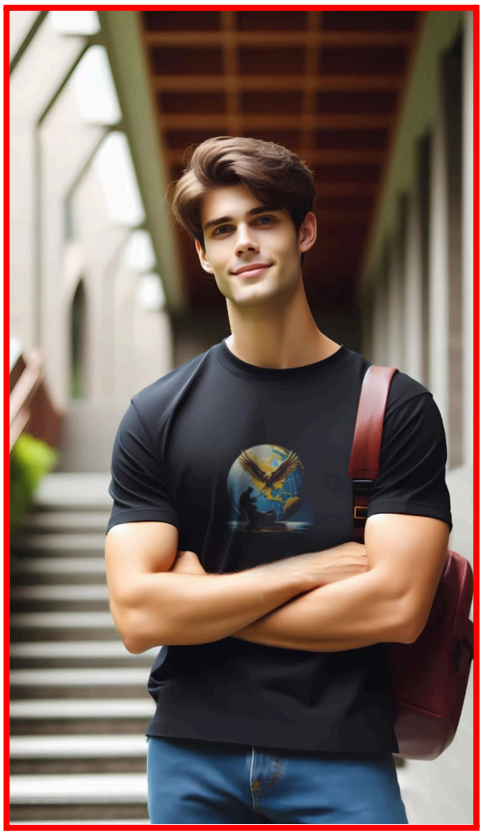

INTRODUCTION

Welcome to Junior College Math Mastery!

This guide is designed by Global Sovereign University to prepare you for college-level mathematics. Whether you're heading to community college, university, or need math skills for your career, this guide builds the foundation you need.

Our Philosophy: College success starts with confidence in algebra and problem-solving. Master these concepts now, and higher mathematics becomes accessible, not intimidating.

Preparing for College Success

Why This Matters:

Math placement tests determine your starting college course

Higher placement = less remedial work = faster graduation

Strong math skills open doors to STEM careers
Problem-solving ability transfers to all subjects

What You'll Master:

Algebraic thinking and equation solving

Coordinate graphing and linear equations

Working with exponents and roots

Applying formulas to real problems

Translating word problems into math

How to Use This Guide

Step 1: Read concept reviews—understanding principles beats memorization

Step 2: Start with Bronze to build solid foundations

Step 3: Progress through Silver and Gold systematically

Step 4: Use answer key to learn methods, not just check answers

Step 5: Track progress toward college readiness!

Achievement Levels

BRONZE LEVEL - Foundation Building Master fundamental concepts Goal: 80% accuracy

SILVER LEVEL - Skill Development Apply concepts to varied problems
Goal: 80% accuracy

GOLD LEVEL - College Ready Solve complex, multi-step problems Goal: 80% accuracy = COLLEGE READY!

SECTION 1: ALGEBRA BASICS

Understanding Algebra

What is Algebra? Algebra uses letters (variables) to represent numbers we don't know yet or that can change. It's the language of mathematics.

Key Concepts:

VARIABLES: Letters that represent unknown values

x, y, n, a, b are common variables

2x means "2 times x"

x^2 means "x times x"

EXPRESSIONS vs EQUATIONS:
Expression: 3x + 5 (no equals sign)

Equation: 3x + 5 = 14 (has equals sign)

SOLVING EQUATIONS: Goal: Get variable alone on one side

ONE-STEP EQUATIONS: x + 5 = 12 → Subtract 5 → x = 7 x - 3 = 10 → Add 3 → x = 13 3x = 21 → Divide by 3 → x = 7 x/4 = 5 → Multiply by 4 → x = 20

TWO-STEP EQUATIONS: 2x + 5 = 13 Step 1: Subtract 5 → 2x = 8 Step 2: Divide by 2 → x = 4

DISTRIBUTIVE PROPERTY: a(b + c) = ab + ac Example: 3(x + 4) = 3x + 12

COMBINING LIKE TERMS: 3x + 5x = 8x 4y - 2y = 2y Cannot combine: 3x + 5y (different variables)

BRONZE LEVEL - ALGEBRA

Problems 1-30: One-step equations

1. x + 8 = 15; x = ___

2. x - 6 = 12; x = ___

3. x + 11 = 28; x = ___

4. x - 9 = 17; x = ___

5. x + 14 = 35; x = ___

6. 4x = 28; x = ___

7. 6x = 42; x = ___

8. 8x = 56; x = ___

9. 10x = 90; x = ___

10. 12x = 96; x = ___

11. x/3 = 7; x = ___

12. x/5 = 9; x = ___

13. x/7 = 8; x = ___

14. x/4 = 11; x = ___

15. x/6 = 10; x = ___

16. x + 15 = 42; x = ___

17. x - 13 = 25; x = ___

18. 9x = 81; x = ___

19. x/8 = 6; x = ___

20. x + 22 = 50; x = ___

21. x - 18 = 31; x = ___

22. 15x = 75; x = ___

23. x/9 = 7; x = ___

24. x + 19 = 45; x = ___

25. x - 14 = 28; x = ___

26. 11x = 88; x = ___

27. x/12 = 5; x = ___

28. x + 25 = 60; x = ___

29. x - 16 = 34; x = ___

30. 13x = 91; x = ___

Problems 31-60: Two-step equations

31. 2x + 5 = 17; x = ___

32. 3x - 7 = 20; x = ___

33. 4x + 9 = 29; x = ___

34. 5x - 12 = 23; x = ___

35. 6x + 8 = 38; x = ___

36. 7x - 15 = 27; x = ___

37. 8x + 11 = 51; x = ___

38. 9x - 18 = 36; x = ___

39. 10x + 7 = 57; x = ___

40. 12x - 24 = 48; x = ___

41. 3x + 10 = 31; x = ___

42. 4x - 8 = 24; x = ___

43. 5x + 15 = 45; x = ___

44. 6x - 18 = 36; x = ___

45. 7x + 12 = 54; x = ___

46. 8x - 16 = 40; x = ___

47. 9x + 20 = 65; x = ___

48. 11x - 22 = 55; x = ___

49. 2x + 18 = 44; x = ___

50. 3x - 12 = 21; x = ___

51. 4x + 6 = 34; x = ___

52. 5x - 10 = 30; x = ___

53. 6x + 14 = 56; x = ___

54. 7x - 21 = 35; x = ___

55. 8x + 9 = 57; x = ___

56. 9x - 27 = 45; x = ___

57. 10x + 5 = 65; x = ___

58. 12x - 30 = 54; x = ___

59. 15x + 12 = 87; x = ___

60. 20x - 40 = 80; x = ___

SILVER LEVEL - ALGEBRA

Problems 61-90: Multi-step and distributive property

61. 3x + 7 - 2 = 23; x = ___

62. 5x - 9 + 4 = 30; x = ___

63. 2(x + 5) = 24; x = ___

64. 3(x - 4) = 21; x = ___

65. 4(2x + 3) = 52; x = ___

66. 5(3x - 2) = 55; x = ___

67. 2(x + 7) + 3 = 29; x = ___

68. 3(x - 5) - 4 = 17; x = ___

69. 4(x + 2) = 36; x = ___

70. 6(x - 3) = 42; x = ___
71. 2x + 3x = 35; x = ___

72. 7x - 3x = 32; x = ___

73. 4x + 2x - 5 = 37; x = ___

74. 6x - 2x + 8 = 36; x = ___

75. 3(x + 4) = 2x + 22; x = ___

76. 4(x - 2) = 3x + 5; x = ___

77. 5(x + 3) = 4x + 23; x = ___

78. 6(x - 1) = 5x + 7; x = ___

79. 2(3x + 5) = 34; x = ___

80. 3(2x - 4) = 30; x = ___

81. 4(x + 6) - 5 = 43; x = ___

82. 5(x - 3) + 7 = 42; x = ___

83. 3(2x + 1) = 27; x = ___

84. 4(3x - 2) = 40; x = ___

85. 5x + 2(x + 4) = 36; x = ___

86. 6x - 3(x - 2) = 24; x = ___

87. 2(x + 5) + 3(x - 2) = 34; x = ___

88. 4(x - 3) - 2(x + 1) = 10; x = ___

89. 3(2x + 4) - 2x = 40; x = ___

90. 5(x - 2) + 3x = 54; x = ___

GOLD LEVEL - ALGEBRA

Problems 91-100: Advanced equations and word problems

91. 2x/3 + 5 = 17; x = ___

92. 3x/4 - 6 = 12; x = ___

93. (x + 5)/2 = 8; x = ___

94. (x - 3)/4 = 5; x = ___

95. 0.5x + 3.2 = 8.7; x = ___

96. 0.75x - 2.5 = 7; x = ___

97. 1.2x + 4.8 = 16.8; x = ___

98. 2.5x - 3.5 = 11.5; x = ___

99. 3(x + 4) - 2(x - 1) = 23; x = ___

100. 4(2x - 3) - 3(x - 2) = 28; x = ___

SECTION 2: GRAPHING & COORDINATE PLANE

Understanding Graphing

The Coordinate Plane: Two number lines that cross at right angles

Horizontal line = x-axis

Vertical line = y-axis

Where they cross = origin (0, 0)

Ordered Pairs: Points written as (x, y)

First number = x-coordinate (left/right)

Second number = y-coordinate (up/down)

Example: (3, 5) means "3 right, 5 up" from origin

Quadrants:

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II | I
------+------
III | IV
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Quadrant I: Both positive (+, +)
Quadrant II: (-, +)
Quadrant III: (-, -)
Quadrant IV: (+, -)

Linear Equations: Form: y = mx + b

m = slope (steepness)

b = y-intercept (where line crosses y-axis)

Slope: Rise over run = Change in y / Change in x Slope between (x_1, y_1) and (x_2, y_2): $m = (y_2 - y_1) / (x_2 - x_1)$

Types of Slope:

Positive slope: Line goes up from left to right

Negative slope: Line goes down from left to right

Zero slope: Horizontal line

Undefined slope: Vertical line

BRONZE LEVEL - GRAPHING

Problems 101-130: Identifying coordinates

What are the coordinates? 101. 3 right, 4 up = (__, **) 102. 5 right, 2 up = (,) 103. 2 left, 3 up = (,) 104. 4 left, 1 up = (,) 105. 6 right, 5 down = (,) 106. 3 right, 2 down = (,) 107. 1 left, 4 down = (,) 108. 5 left, 3 down = (,) 109. Origin = (,) 110. 7 right on x-axis = (,) 111. 4 up on y-axis = (,) 112. 8 right, 1 up = (,) 113. 2 left, 6 up = (,) 114. 5 right, 7 down = (,) 115. 9 left, 2 down = (, __)**

Which quadrant?

116. (5, 3) is in Quadrant ___
117. (-4, 2) is in Quadrant ___
118. (-3, -5) is in Quadrant ___
119. (6, -2) is in Quadrant ___
120. (7, 8) is in Quadrant ___
121. (-2, 9) is in Quadrant ___
122. (-6, -4) is in Quadrant ___
123. (4, -7) is in Quadrant ___
124. (1, 5) is in Quadrant ___
125. (-8, 3) is in Quadrant ___
126. (-5, -1) is in Quadrant ___
127. (9, -6) is in Quadrant ___
128. (3, 10) is in Quadrant ___
129. (-7, 4) is in Quadrant ___
130. (2, -8) is in Quadrant ___

SILVER LEVEL - GRAPHING

Problems 131-160: Finding slope

Find the slope between these points:

131. (1, 2) and (3, 6): m = ___
132. (2, 3) and (4, 7): m = ___
133. (0, 1) and (2, 5): m = ___
134. (1, 4) and (3, 8): m = ___
135. (2, 5) and (4, 9): m = ___

136. (0, 0) and (3, 6): m = ___
137. (1, 3) and (4, 9): m = ___
138. (2, 1) and (5, 7): m = ___
139. (0, 2) and (4, 10): m = ___
140. (1, 5) and (4, 11): m = ___
141. (1, 8) and (3, 4): m = ___
142. (2, 10) and (4, 6): m =
___ 143. (0, 5) and (2, 3): m =
___ 144. (1, 7) and (3, 1): m =
___ 145. (2, 9) and (4, 5): m =
___ 146. (0, 4) and (4, 4): m =
___ 147. (1, 6) and (5, 6): m =
___ 148. (2, 3) and (6, 3): m =
___ 149. (0, 7) and (3, 7): m =
___ 150. (1, 2) and (4, 2): m =
___ 151. (3, 1) and (3, 5): m =
___ 152. (2, 4) and (2, 8): m =
___ 153. (5, 2) and (5, 7): m =
___ 154. (1, 3) and (1, 9): m =
___ 155. (4, 0) and (4, 6): m =
___ 156. (2, 1) and (5, 4): m =
___ 157. (1, 2) and (4, 8): m =
___ 158. (0, 3) and (3, 9): m =
___ 159. (1, 1) and (3, 7): m =
___ 160. (2, 4) and (6, 12): m
= ___

GOLD LEVEL - GRAPHING

Problems 161-180: Linear equations

Find the y-intercept (b) when x = 0:

161. y = 2x + 5; when x=0, y = ___
162. y = 3x - 4; when x=0, y = ___
163. y = -2x + 7; when x=0, y = ___
164. y = 4x + 3; when x=0, y = ___
165. y = -x + 6; when x=0, y = ___

Find y when x = 3:

166. y = 2x + 1; y = ___
167. y = 3x - 5; y = ___

168. y = 4x + 2; y = ___

169. y = -2x + 10; y = ___

170. y = 5x - 7; y = ___

Find x when y = 0:

171. y = 2x - 6; x = ___

172. y = 3x - 9; x = ___

173. y = 4x - 12; x = ___

174. y = 5x - 15; x = ___

175. y = -2x + 8; x = ___

Identify slope (m) and y-intercept (b): 176. y = 3x + 7; m=, ***b*****=** 177. y = -2x + 4; m=, ***b*****=** 178. y = 5x - 3; m=, ***b*****=** 179. y = -4x + 9; m=, ***b*****=** 180. y = 6x - 8; m=, ***b*****=**

SECTION 3: EXPONENTS & ROOTS

Understanding Exponents

What are Exponents? Exponents show repeated multiplication

$2^3 = 2 \times 2 \times 2 = 8$

Base = 2, Exponent = 3

Exponent Rules:

MULTIPLICATION (same base): x^a × x^b = x^(a+b) Example: $2^3 \times 2^4 = 2^7$

DIVISION (same base): x^a ÷ x^b = x^(a-b) Example: $2^5 \div 2^2 = 2^3$

POWER TO A POWER: (x^a)^b = x^(ab) Example: $(2^3)^2 = 2^6$

ZERO EXPONENT: $x^0 = 1$ (any number to the zero power equals 1)

NEGATIVE EXPONENT: x^(-a) = 1/x^a Example: $2^{(-3)} = 1/2^3 = 1/8$

Square Roots: √x asks "what number times itself equals x?"

$\sqrt{16} = 4$ (because $4 \times 4 = 16$)

$\sqrt{25} = 5$ (because $5 \times 5 = 25$)

Perfect Squares: 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225...

BRONZE LEVEL - EXPONENTS

Problems 181-210: Basic exponents

Calculate:

181. 2^2 = ___

182. 3^2 = ___

183. 4^2 = ___

184. 5^2 = ___

185. 6^2 = ___

186. 7^2 = ___

187. 8^2 = ___

188. 9^2 = ___

189. 10^2 = ___

190. 11^2 = ___

191. 12^2 = ___

192. 13^2 = ___

193. 14^2 = ___

194. 15^2 = ___

195. 20^2 = ___

196. 2^3 = ___

197. 3^3 = ___

198. 4^3 = ___

199. 5^3 = ___

200. 10^3 = ___

201. 2^4 = ___

202. 3^4 = ___

203. 5^4 = ___

204. 2^5 = ___

205. 3^5 = ___

206. 2^6 = ___

207. 10^4 = ___

208. 2^7 = ___

209. 2^8 = ___

210. 10^5 = ___

SILVER LEVEL - EXPONENTS

Problems 211-240: Square roots and exponent rules

Find the square root:

211. $\sqrt{4}$ = ___

212. $\sqrt{9}$ = ___

213. $\sqrt{16}$ = ___
214. $\sqrt{25}$ = ___
215. $\sqrt{36}$ = ___
216. $\sqrt{49}$ = ___
217. $\sqrt{64}$ = ___
218. $\sqrt{81}$ = ___
219. $\sqrt{100}$ = ___
220. $\sqrt{121}$ = ___
221. $\sqrt{144}$ = ___
222. $\sqrt{169}$ = ___
223. $\sqrt{196}$ = ___
224. $\sqrt{225}$ = ___
225. $\sqrt{1}$ = ___

Multiply (add exponents):

226. $2^2 \times 2^3 = 2^{\_\_\_}$
227. $3^2 \times 3^4 = 3^{\_\_\_}$
228. $5^3 \times 5^2 = 5^{\_\_\_}$
229. $2^4 \times 2^2 = 2^{\_\_\_}$
230. $4^2 \times 4^3 = 4^{\_\_\_}$

Divide (subtract exponents):

231. $2^5 \div 2^2 = 2^{\_\_\_}$
232. $3^6 \div 3^2 = 3^{\_\_\_}$
233. $5^5 \div 5^3 = 5^{\_\_\_}$
234. $2^8 \div 2^4 = 2^{\_\_\_}$
235. $4^6 \div 4^2 = 4^{\_\_\_}$

Power to power (multiply exponents):

236. $(2^2)^3 = 2^{\_\_\_}$
237. $(3^2)^2 = 3^{\_\_\_}$
238. $(5^2)^3 = 5^{\_\_\_}$
239. $(2^3)^2 = 2^{\_\_\_}$
240. $(4^2)^2 = 4^{\_\_\_}$

GOLD LEVEL - EXPONENTS

Problems 241-250: Advanced exponent problems

241. 5^0 = ___

242. 10^0 = ___

243. 2^(-2) = ___

244. 3^(-2) = ___

245. 2^(-3) = ___

246. $(2^3)^2$ = ___

247. $2^3 \times 2^2 \div 2^4 = 2^{\_\_\_}$

248. $(3^2)^3 \div 3^4 = 3^{\_\_\_}$

249. √(4 × 9) = ___

250. √(16 + 9) = ___

SECTION 4: FORMULAS & APPLICATIONS

Understanding Formulas

Common Formulas:

GEOMETRY:

Rectangle Area: A = lw
Triangle Area: A = ½bh

Circle Area: $A = \pi r^2$

Circle Circumference: $C = 2\pi r$

MOTION:

Distance: d = rt (distance = rate × time)

Rate: r = d/t

Time: t = d/r

TEMPERATURE:

Fahrenheit to Celsius: C = (F - 32) × 5/9

Celsius to Fahrenheit: F = (C × 9/5) + 32

BUSINESS:

Simple Interest: I = Prt (Interest = Principal × rate × time)

Profit: P = R - C (Profit = Revenue - Cost)

Using Formulas:

1. Write the formula
2. Substitute known values
3. Solve for the unknown

BRONZE LEVEL - FORMULAS

Problems 251-280: Distance, rate, time

Distance = rate × time

251. Rate=50 mph, Time=3 hours. Distance = ___

252. Rate=60 mph, Time=2 hours. Distance = ___

253. Rate=45 mph, Time=4 hours. Distance = ___

254. Rate=55 mph, Time=5 hours. Distance = ___

255. Rate=70 mph, Time=2.5 hours. Distance = ___

256. Distance=120 mi, Time=2 hr. Rate = ___

257. Distance=180 mi, Time=3 hr. Rate = ___

258. Distance=240 mi, Time=4 hr. Rate = ___

259. Distance=300 mi, Time=5 hr. Rate = ___ 260.

Distance=150 mi, Time=2.5 hr. Rate = ___ 261.

Distance=100 mi, Rate=50 mph. Time = ___ 262.

Distance=150 mi, Rate=60 mph. Time = ___ 263.

Distance=200 mi, Rate=40 mph. Time = ___ 264.

Distance=240 mi, Rate=60 mph. Time = ___ 265.

Distance=300 mi, Rate=75 mph. Time = ___ 266.

Rate=65 mph, Time=3.5 hours. Distance = ___ 267.

Rate=72 mph, Time=2.25 hours. Distance = ___ 268.

Distance=225 mi, Time=3.75 hr. Rate = ___ 269.

Distance=350 mi, Rate=70 mph. Time = ___ 270.

Distance=420 mi, Rate=60 mph. Time = ___ 271.

Rate=80 mph, Time=1.5 hours. Distance = ___ 272.

Rate=90 mph, Time=2.5 hours. Distance = ___ 273.

Distance=280 mi, Time=4 hr. Rate = ___ 274.

Distance=360 mi, Time=6 hr. Rate = ___ 275.

Distance=480 mi, Rate=80 mph. Time = ___ 276.

Rate=55 mph, Time=6 hours. Distance = ___ 277.

Rate=65 mph, Time=4.5 hours. Distance = ___ 278.

Distance=195 mi, Time=3 hr. Rate = ___ 279.

Distance=540 mi, Rate=90 mph. Time = ___ 280.

Distance=400 mi, Rate=50 mph. Time = ___

SILVER LEVEL - FORMULAS

Problems 281-310: Area and perimeter

281. Rectangle: l=12, w=8. Area = ___

282. Rectangle: l=15, w=10. Perimeter = ___

283. Triangle: b=10, h=8. Area = ___

284. Square: s=9. Area = ___
285. Square: s=12. Perimeter = ___

286. Circle: r=5, $\pi \approx 3.14$. Area ≈ ___

287. Circle: r=7, $\pi \approx 3.14$. Circumference ≈ ___

288. Rectangle: l=18, w=12. Area = ___ 289.

Triangle: b=14, h=10. Area = ___ 290. Square:

s=15. Area = ___

291. Rectangle: l=20, w=14. Perimeter = ___

292. Triangle: b=16, h=12. Area = ___ 293.

Circle: r=10, π≈3.14. Area ≈ ___ 294.

Rectangle: l=25, w=16. Area = ___ 295.

Square: s=18. Perimeter = ___

296. Circle: r=8, π≈3.14. Circumference ≈ ___

297. Triangle: b=20, h=15. Area = ___ 298.

Rectangle: l=30, w=20. Area = ___ 299.

Circle: r=12, π≈3.14. Area ≈ ___ 300. Square:

s=20. Area = ___

301. Rectangle: l=22, w=15. Area = ___

302. Triangle: b=18, h=14. Area = ___

303. Circle: r=6, π≈3.14. Area ≈ ___

304. Rectangle: l=28, w=18. Perimeter = ___

305. Square: s=25. Area = ___

306. Triangle: b=24, h=16. Area = ___ 307.

Circle: r=9, π≈3.14. Circumference ≈ ___ 308.

Rectangle: l=32, w=24. Area = ___ 309.

Square: s=22. Perimeter = ___

310. Circle: r=15, π≈3.14. Area ≈ ___

GOLD LEVEL - FORMULAS

Problems 311-320: Mixed formula applications

311. Convert 86°F to Celsius. C = (F-32)×5/9 = ___ 312.

Convert 30°C to Fahrenheit. F = (C×9/5)+32 = ___ 313. Simple

Interest: P=$1,000, r=5% (0.05), t=3 years. I = ___ 314. Simple

Interest: P=$2,500, r=4% (0.04), t=2 years. I = ___ 315. Profit: Revenue=$8,000, Cost=$5,200. Profit = ___ 316. A car travels 180 miles in 3 hours. Average speed = ___ 317. You invest $5,000 at 6% for 4 years. Interest earned = ___ 318. A rectangle has area 144 sq ft and width 8 ft. Length = ___ 319. A circle has circumference 62.8 ft (π≈3.14). Radius = ___ 320. You drive 240 miles at 60 mph. Time taken = ___

SECTION 5: WORD PROBLEMS

Understanding Problem-Solving

Steps to Solve Word Problems:

1. **READ** carefully - understand what's being asked
2. **IDENTIFY** known and unknown values
3. **CHOOSE** the right operation or formula
4. **SOLVE** step by step
5. **CHECK** if the answer makes sense

Key Words:

ADDITION: total, sum, altogether, combined
SUBTRACTION: difference, less than, remaining
MULTIPLICATION: times, product, each, per
DIVISION: divided by, per, each, average

Translation Examples:

"5 more than x" → x + 5

"3 less than x" → x - 3

"twice x" → 2x

"x divided by 4" → x/4
"the sum of x and 7" → x + 7

BRONZE LEVEL - WORD PROBLEMS

Problems 321-350: Basic word problems

321. Maria has $45. She earns $18 more. How much total?

322. John had $80. He spent $32. How much left?

323. A book costs $15. How much for 6 books?

324. 96 students divided equally into 8 groups. Students per group?

325. Tom is 14 years old. His brother is 5 years younger. Brother's age?

326. A number increased by 12 equals 35. Find the number. 327. Three times a number is 72. Find the number.

328. A number decreased by 18 is 27. Find the number.

329. Sarah ran 3 miles on Monday and 4 miles on Tuesday. Total miles? 330. A rope is 50 feet long. 18 feet are cut off. Length remaining? 331. Each box holds 24 items. How many items in 8 boxes? 332. 144 cookies divided equally among 12 people. Cookies per person? 333. Jake has $125. He wants to buy a $95 jacket. Money left after purchase? 334. A number plus 23 equals 58. Find the number.

335. Five times a number is 95. Find the number.

336. A school has 450 students. 178 are boys. How many girls?

337. Movie tickets cost $12 each. Cost for 5 tickets?

338. A car travels 180 miles in 3 hours. Average speed?

339. The sum of two numbers is 45. One number is 18. Find the other.

340. A rectangle's length is 12 and width is 8. Find area.

341. Twice a number plus 7 equals 31. Find the number.

342. Maria saved $15 per week for 8 weeks. Total saved?

343. A pizza is cut into 12 slices. If you eat 5 slices, how many remain?

344. Three consecutive numbers sum to 75. Find the middle number.

345. A number minus 14 equals 36. Find the number.

346. The product of 8 and a number is 120. Find the number.

347. A baker makes 48 cookies per batch. How many cookies in 6 batches?

348. 216 people divided equally into 9 buses. People per bus?

349. The quotient of a number and 5 is 18. Find the number.

350. Seven more than twice a number is 29. Find the number.

SILVER LEVEL - WORD PROBLEMS

Problems 351-370: Multi-step word problems

351. Maria has $120. She buys 3 books at $18 each. How much left? 352. A store bought shirts for $25 each and sold them for $40 each. Profit per shirt? 353. John works 8 hours at $15/hour. How much does he earn?

354. A number is tripled, then 12 is added, giving 57. Find the number. 355. The sum of three consecutive numbers is 78. Find the smallest number. 356. A rectangle's length is 3 times its width. If width is 7, find area. 357. Tom scored 85, 92, and 88 on three tests. What's his average? 358. A car rental costs $45 per day plus $0.25 per mile. Cost for 3 days and 120 miles? 359. The perimeter of a square is 68. Find the length of one side.

360. A number is doubled, then decreased by 15, giving 49. Find the number. 361. Maria and Jake together have $95. Maria has $55. How much does Jake have? 362. A triangle has base 14 and height 10. Find the area.

363. You buy 5 pounds of apples at $2.40 per pound. Total cost?

364. The difference between two numbers is 23. The larger is 58. Find the smaller.

365. A rectangular garden is 25 feet by 18 feet. How many feet of fencing needed?

366. Three friends split a $72 restaurant bill equally. How much each? 367. A

number increased by 40% is 84. Find the original number. 368. The product of 7

and a number, decreased by 12, is 44. Find the number. 369. A circle has radius 8.

Find the area ($\pi \approx 3.14$).

370. You save $25 per week. How many weeks to save $450?

GOLD LEVEL - WORD PROBLEMS
Problems 371-380: Complex word problems

371. A store marks up items 40%. If an item costs $60, what's the selling price?

372. An investment of $2,000 earns 5% simple interest annually. How much interest after 3 years?

373. Two numbers are in ratio 3:5. Their sum is 96. Find both numbers.

374. A car travels 120 miles at 60 mph, then 180 miles at 45 mph. What's the total time? 375.

The length of a rectangle is 8 more than twice its width. If the width is 7, find the perimeter.

376. You mix 6 liters of 20% acid solution with 4 liters of 50% acid solution. What's the concentration of the mixture?

377. Maria is 3 years older than twice Jake's age. If Maria is 23, how old is Jake?

378. A box contains 5 more red marbles than blue marbles. If there are 63 marbles total and an equal number of green marbles as blue marbles, how many red marbles?

379. The temperature drops from 15°C at a rate of 2°C per hour. After how many hours will it reach -3°C?

380. A water tank is draining at 8 gallons per minute. If it starts with 320 gallons, how many minutes until it's empty?

SECTION 6: MIXED PRACTICE

Problems 381-400: Comprehensive review

381. Solve: $3x - 7 = 20$

382. What are the coordinates: 4 right, 3 down?

383. Calculate: 5^3

384. Find the slope between (2, 3) and (6, 11)

385. √81 = ___

386. Distance = 240 miles, Rate = 60 mph. Time = ___

387. Solve: 2(x + 5) = 28

388. Rectangle: l=15, w=9. Area = ___

389. Which quadrant: (-5, 4)?

390. $2^4 \times 2^3 = 2^{\wedge}$___

391. Triangle: b=12, h=8. Area = ___
392. Solve: 4x + 15 = 51

393. Find y when x=2: y = 3x - 5

394. Circle: r=6, π≈3.14. Area ≈ ___

395. Solve: 5(x - 3) = 30

396. Convert: 50°C to Fahrenheit

397. √144 = ___

398. Solve: 2x/3 = 18

399. Profit = Revenue $5,000 - Cost $3,200 = ___

400. A number plus 15 equals 62. Find the number.

COMPLETE ANSWER KEY

[Abbreviated - Full guide would include all 400 answers with explanations]

ALGEBRA (1-100)

1. 7 31. 6 61. 6 91. 18

2. 18 32. 9 62. 7 92. 24

3. 17 33. 5 63. 7 93. 11 [continuing...]

GRAPHING (101-180)

101. (3,4) 131. 2 161. 5

102. (5,2) 132. 2 162. -4 [continuing...]

EXPONENTS (181-250)

181. 4 211. 2 241. 1

182. 9 212. 3 242. 1 [continuing...]

FORMULAS (251-320)

251. 150 mi 281. 96 311. 30°C

252. 120 mi 282. 50 312. 86°F [continuing...]

WORD PROBLEMS (321-380)

321. $63 351. $66 371. $84

322. $48 352. $15 372. $300 [continuing...]

MIXED (381-400)

381. x=9 391. 48 396. 122°F

382. (4,-3) 392. x=9 397. 12 [continuing...]

PROGRESS TRACKER

ALGEBRA: __/100 = ___% **GRAPHING:** __/80 = ___% **EXPONENTS:** __/70 = ___% **FORMULAS:** __/70 = ___% **WORD PROBLEMS:** __/60 = ___% **MIXED:** __/20 = ___%

TOTAL: __/400 = ___%

COLLEGE READINESS:

90-100%: ✓✓ HONORS READY

80-89%: ✓✓ COLLEGE READY

70-79%: ✓✓ NEARLY READY

Below 70%: Continue practicing

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