

# Math Word Problems

Algebra 1 • Geometry — Self-Study Worksheet

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## ALGEBRA 1

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A-01

Sarah has \$240 and spends \$15/day. Marcus has \$60 and earns \$9/day. After how many days will they have the same amount?

KEY: One decreases, one increases → opposite signs in equation

A) 6 days

B) 7.5 days (≈8 days) ✓

C) 10 days

D) 8 days

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A-02

The sum of three consecutive odd integers is 57. What is the largest integer?

KEY: Consecutive ODD/EVEN → use  $n$ ,  $n+2$ ,  $n+4$

A) 17

B) 19

C) 21 ✓

D) 23

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A-03

A train travels A→B at 60 mph and returns at 40 mph. Total trip: 5 hours. How far is A to B?

KEY:  $d/r1 + d/r2 = \text{total time}$  (find LCD)

A) 100 miles

B) 125 miles

C) 120 miles ✓

D) 150 miles

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A-04

Apples cost \$0.75 each, oranges \$1.25 each. Jake buys 20 fruits for exactly \$19. How many oranges?

KEY: Two unknowns → two equations (system). Substitute!

A) 7

B) 8 ✓

C) 10

D) 12

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A-05

A number is 5 more than twice another. Their sum is 41. What is the smaller number?

KEY: '5 more than twice  $x$ ' =  $2x + 5$  (NOT  $2(x+5)$ )

A) 12 ✓

B) 14

C) 15

D) 18

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## ANSWER KEY & SOLUTIONS

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### Algebra 1

No.	Answer	Key Formula / Solution
A-01	B	$240 - 15d = 60 + 9d \rightarrow 180 = 24d \rightarrow d = 7.5$
A-02	C	$n + (n+2) + (n+4) = 57 \rightarrow 3n = 51 \rightarrow n = 17 \rightarrow \text{largest} = 21$
A-03	C	$d/60 + d/40 = 5 \rightarrow 2d/120 + 3d/120 = 5 \rightarrow 5d = 600 \rightarrow d = 120$
A-04	B	$a+r=20, 0.75a+1.25r=19 \rightarrow \text{sub } a=20-r \rightarrow 0.5r=4 \rightarrow r=8$
A-05	A	$y = 2x+5, x+y=41 \rightarrow x+2x+5=41 \rightarrow 3x=36 \rightarrow x=12$
A-06	C	Net rate = $1/4 - 1/6 = 1/12$ per hour $\rightarrow$ Time = 12 hours
A-07	C	$80 \times 0.80 = \$64 \rightarrow 64 \times 0.90 = \$57.60$ (effective discount = 28%)
A-08	C	$3b+8 = 2(b+8) \rightarrow b=8 \rightarrow \text{Emma} = 3 \times 8 = 24$
A-09	C	$(6+x)/(20+x) = 0.50 \rightarrow 6+x = 10+0.5x \rightarrow 0.5x = 4 \rightarrow x = 8$
A-10	C	$w+2w+4=28 \rightarrow w=8, l=20 \rightarrow \text{Area} = 8 \times 20 = 160 \text{ cm}^2$

### Geometry

No.	Answer	Key Formula / Solution
G-01	C	$x+(x+28)=180 \rightarrow 2x=152 \rightarrow x=76^\circ \rightarrow \text{larger} = 104^\circ$
G-02	C	$x+2x+(2x-30)=180 \rightarrow 5x=210 \rightarrow x=42^\circ$
G-03	C	$5^2+h^2=13^2 \rightarrow h^2=169-25=144 \rightarrow h=12 \text{ ft}$ (triple: 5,12,13)
G-04	C	Area ratio = 9:25 $\rightarrow A = 27 \times (25/9) = 75 \text{ cm}^2$
G-05	B	$115^\circ = 58^\circ + x \rightarrow x = 57^\circ$
G-06	C	$24\pi=2\pi r \rightarrow r=12 \rightarrow A=\pi(12)^2=144\pi \text{ cm}^2$
G-07	C	diagonal= $\sqrt{64+36}=10\text{m} \rightarrow \text{two sides}=14\text{m} \rightarrow \text{diff}=4\text{m}$
G-08	B	$V=(1/3) \times 3.14 \times 36 \times 8 = (1/3) \times 904.32 = 301.44 \text{ cm}^3$
G-09	C	$2/3 = h/15 \rightarrow h = 30/3 = 10 \text{ m}$
G-10	B	$150=6s^2 \rightarrow s^2=25 \rightarrow s=5 \rightarrow V=5^3=125 \text{ cm}^3$