

- A) \$68.00
C) \$64.80

- B) \$66.00
D) \$72.00

Q06 · System of Equations | ■ Tricky

Tickets at the Fair

Adult tickets cost \$7 and child tickets cost \$4. A family bought 9 tickets total and paid \$48. How many adult tickets did they buy?

- A) 4
C) 3

- B) 5
D) 6

Q07 · Age Problem | ■ Tricky

The Age Puzzle

Right now, a mother is 4 times as old as her daughter. In 6 years, she will be only 3 times as old. How old is the daughter now?

- A) 10
C) 8

- B) 12
D) 6

Q08 · Proportion

The Recipe Scale-Up

A recipe for 4 people uses $2\frac{1}{2}$ cups of flour. If you want to make it for 10 people, how many cups of flour do you need?

- A) $5\frac{1}{2}$ cups
C) $6\frac{1}{4}$ cups

- B) 6 cups
D) 7 cups

Q09 · Inequalities

The Grade Requirement

Maya scored 72, 85, and 90 on three tests. What is the minimum score she needs on her fourth test to have an average of at least 82?

- A) 78
C) 84

- B) 81
D) 79

Q10 · Coin Problem | ■ Tricky

The Coin Jar

A jar has only dimes and quarters. There are 24 coins total, worth \$3.75. How many quarters are there?

- A) 7
C) 9

- B) 10
D) 11

PART 02 — GEOMETRY: Shapes · Angles · Proofs

■ **MEMORY POINT**

Triangle angles = 180° | Full turn = 360° | Supplementary = 180° | Complementary = 90°

Pythagorean Theorem: $a^2 + b^2 = c^2$ (c = hypotenuse, always LONGEST side)

Area: Triangle = $\frac{1}{2}bh$ | Circle = πr^2 (use RADIUS, not diameter!) | Rectangle = lw

- A) 96 cm²
C) 40 cm²

- B) 48 cm²
D) 24 cm²

Q18 · Volume | ■ Tricky

Filling the Box

A rectangular box is 6 cm × 4 cm × 5 cm. If you double only the height, the new volume is how many times the original?

- A) 4 times
C) 8 times

- B) 2 times
D) 3 times

Q19 · Similar Triangles

The Shadow Problem

A 6-foot person casts a 4-foot shadow. At the same time, a nearby tree casts a 20-foot shadow. How tall is the tree?

- A) 24 ft
C) 30 ft

- B) 28 ft
D) 32 ft

Q20 · Circumference | ■ Tricky

Wheels & Distance

A bicycle wheel has a radius of 35 cm. How far does the bike travel in 10 full rotations? (Use $\pi \approx 3.14$)

- A) 1,099 cm
C) 2,198 cm

- B) 2,100 cm
D) 1,750 cm

ANSWER KEY & QUICK HINTS

Q	Answer	Solution Hint
Q01	D) \$48	Let Jake = x, Emma = 3x. After transfer: $3x - 12 = x + 12 \rightarrow x = 12 \rightarrow$ Emma started with $3(12) + 12 = \$48$.
Q02	B) 2 hours	Opposite directions \rightarrow add speeds: $60 + 80 = 140$ mph. Time = $280 \div 140 = 2$ hrs.
Q03	C) 28	Consecutive even: n, n+2, n+4. Sum: $3n + 6 = 78 \rightarrow n = 24$. Largest = $24 + 4 = 28$.
Q04	D) 12.5 lb	$8x + 12(20 - x) = 9.5 \times 20 \rightarrow -4x = -50 \rightarrow x = 12.5$ lb.
Q05	B) \$66.00	After discount: $80 \times 0.75 = \$60$. After tax: $60 \times 1.10 = \$66$. Apply each step to the CURRENT price.
Q06	A) 4	$a + c = 9$ and $7a + 4c = 48$. Substitute $c = 9 - a$: $7a + 4(9 - a) = 48 \rightarrow 3a = 12 \rightarrow a = 4$.
Q07	B) 12	Let daughter = d, mother = 4d. In 6 years: $4d + 6 = 3(d + 6) \rightarrow d = 12$.
Q08	C) 6¼ cups	Proportion: $2.5/4 = x/10 \rightarrow x = 25/4 = 6.25 = 6\frac{1}{4}$ cups.
Q09	B) 81	$(72 + 85 + 90 + x)/4 \geq 82 \rightarrow 247 + x \geq 328 \rightarrow x \geq 81$.
Q10	C) 9	$q + d = 24$ and $0.25q + 0.10d = 3.75$. Multiply: $25q + 10d = 375$. Solve: $q = 9$.
Q11	C) 12 ft	$5^2 + h^2 = 13^2 \rightarrow 25 + h^2 = 169 \rightarrow h = 12$. (5-12-13 triple!)
Q12	B) 70°	Supplementary = 180° . $x + (x + 40) = 180 \rightarrow 2x = 140 \rightarrow x = 70^\circ$.
Q13	B) 78.5 cm²	Diameter = 10, so RADIUS = 5. $A = \pi \times 5^2 = 3.14 \times 25 = 78.5$ cm ² .

Q14	C) 53°	Sum of triangle angles = 180°. Third = $180 - 55 - 72 = 53^\circ$.
Q15	B) 8 m	$l = 2w + 4$. Perimeter: $2(l+w) = 56 \rightarrow l+w = 28$. $(2w+4)+w = 28 \rightarrow w = 8$.
Q16	B) 65°	Co-interior angles are SUPPLEMENTARY (add to 180°). $180 - 115 = 65^\circ$.
Q17	B) 48 cm²	Rectangle area = 96. Diagonal splits into 2 equal triangles. Each = $96/2 = 48 \text{ cm}^2$.
Q18	B) 2 times	Original = 120 cm ³ . New = $6 \times 4 \times 10 = 240 \text{ cm}^3$. Ratio = $240/120 = 2$.
Q19	C) 30 ft	Similar triangles: $6/4 = h/20 \rightarrow h = 120/4 = 30 \text{ ft}$.
Q20	C) 2,198 cm	Circumference = $2 \times 3.14 \times 35 = 219.8 \text{ cm}$. $\times 10 \text{ rotations} = 2,198 \text{ cm}$.

Scoring: 18–20 = Excellent | 15–17 = Good | 12–14 = Review needed | Below 12 = Practice more