

# Saving for College

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Score: \_\_\_\_\_ / 24

## Q Quick Review

Saving for a big goal like college works best when you start early and save *regularly*. If you set aside the same amount each period, the total saved is (amount per period)  $\times$  (number of periods). To find how long it takes to reach a goal, divide:  $\text{periods} = \frac{\text{goal}}{\text{amount per period}}$ . Money in a savings account also **earns interest**, so it grows even faster — use  $I = Prt$  for simple interest or  $A = P(1 + r)^t$  for yearly compounding. The two big ideas are: small regular deposits add up, and *time* lets interest do part of the work for you.

◇ **Example:** Jamal saves \$50 every month for 4 years. How much will he have set aside?  
 ⇒ First figure out how many deposits he makes. Four years at 12 months each is  $4 \times 12 = 48$  months, so 48 deposits. Each deposit is \$50, so multiply:  $48 \times \$50 = \$2,400$ . That's the total he sets aside from his own pocket — and if the account also paid interest, he would end up with even more. Saving a little every month really does add up.

**Answer:** \$2,400

## PRACTICE

*Find the total saved, the time needed, or the amount with interest.*

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| <p>1. \$25/month <math>\times</math> 12 months _____</p> <p>2. \$100/month <math>\times</math> 48 months _____</p> <p>3. \$2,000 start + \$500/yr <math>\times</math> 5 yr _____</p> <p>4. \$75/week <math>\times</math> 52 weeks _____</p> <p>5. Goal \$3,000 at \$250/month: months needed _____</p> <p>6. Goal \$6,000 at \$200/month: months needed _____</p> <p>7. \$1,000 at 4% simple interest for 5 yr: total _____</p> <p>8. \$5,000 at 5% compounded annually for 2 yr _____</p> <p>9. \$40/month <math>\times</math> 12 months <math>\times</math> 10 yr _____</p> <p>10. \$500/year <math>\times</math> 18 years _____</p> | <p>11. Goal \$12,000 at \$600/month: months needed _____</p> <p>12. \$200/month <math>\times</math> 6 months + \$300 gift _____</p> <p>13. \$80/month for 5 years _____</p> <p>14. Goal \$10,000 at \$1,250/year: years needed _____</p> <p>15. \$150/month <math>\times</math> 36 months _____</p> <p>16. \$30/week <math>\times</math> 52 weeks <math>\times</math> 4 yr _____</p> <p>17. Interest only: \$2,000 at 6% simple for 4 yr _____</p> <p>18. \$1,000 at 4% compounded annually for 2 yr _____</p> <p>19. Goal \$8,000 at \$200/month: months needed _____</p> <p>20. \$45/month <math>\times</math> 12 months <math>\times</math> 18 yr _____</p> |
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### ◆ Word Problems

21. Beginning when she is born, Nia's parents save \$45 every month for her college fund until she turns 18. How much will they have saved, not counting interest? \_\_\_\_\_
22. Marcus wants to save \$8,000 for his first year of college. He can put away \$200 each month. How many months will it take, and how many years is that? \_\_\_\_\_
23. A relative gives Priya \$5,000 for college and puts it in an account that earns 5% compounded annually. How much is it worth after 2 years? \_\_\_\_\_
24. Two students each save for 4 years. Anna saves \$75 a month; Ben saves \$80 a week. Who saves more, and by how much? \_\_\_\_\_



## Answer Keys

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|---|--|
| <p>1. \$300</p> <p>2. \$4,800</p> <p>3. \$4,500</p> <p>4. \$3,900</p> <p>5. 12 months</p> <p>6. 30 months</p> <p>7. \$1,200</p> <p>8. \$5,512.50</p> <p>9. \$4,800</p> <p>10. \$9,000</p> <p>11. 20 months</p> <p>12. \$1,500</p> | <p>13. \$4,800</p> <p>14. 8 years</p> <p>15. \$5,400</p> <p>16. \$6,240</p> <p>17. \$480</p> <p>18. \$1,081.60</p> <p>19. 40 months</p> <p>20. \$9,720</p> <p>21. \$9,720</p> <p>22. 40 months, or about <math>3\frac{1}{3}</math> years</p> <p>23. \$5,512.50</p> <p>24. Ben; \$13,040 more</p> |
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### Step-by-Step Explanations

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| <p>1. Multiply deposit by number of months: <math>25 \times 12 = 300</math>.</p> <p>2. <math>100 \times 48 = 4800</math> saved in all.</p> <p>3. Add the deposits to the start: <math>2000 + 500 \times 5 = 2000 + 2500 = 4500</math>.</p> <p>4. <math>75 \times 52 = 3900</math> saved in a year.</p> <p>5. Divide goal by monthly deposit: <math>3000 \div 250 = 12</math>.</p> <p>6. <math>6000 \div 200 = 30</math> months.</p> <p>7. Interest = <math>1000 \times 0.04 \times 5 = 200</math>, so total = <math>1000 + 200 = 1200</math>.</p> <p>8. <math>A = 5000(1.05)^2 = 5000 \times 1.1025 = 5512.50</math>.</p> <p>9. That's 120 months total: <math>40 \times 120 = 4800</math>.</p> <p>10. <math>500 \times 18 = 9000</math> saved over 18 years.</p> <p>11. <math>12000 \div 600 = 20</math> months.</p> <p>12. <math>200 \times 6 = 1200</math>, then add the gift: <math>1200 + 300 = 1500</math>.</p> <p>13. Five years is 60 months: <math>80 \times 60 = 4800</math>.</p> <p>14. <math>10000 \div 1250 = 8</math> years.</p> | <p>15. <math>150 \times 36 = 5400</math>.</p> <p>16. One year is <math>30 \times 52 = 1560</math>; over 4 years, <math>1560 \times 4 = 6240</math>.</p> <p>17. <math>I = 2000 \times 0.06 \times 4 = 480</math>.</p> <p>18. <math>A = 1000(1.04)^2 = 1000 \times 1.0816 = 1081.60</math>.</p> <p>19. <math>8000 \div 200 = 40</math> months.</p> <p>20. That's 216 months: <math>45 \times 216 = 9720</math>.</p> <p>21. Eighteen years is <math>18 \times 12 = 216</math> months. Each month they save \$45, so the total is <math>216 \times 45 = \\$9,720</math>.</p> <p>22. Divide the goal by the monthly deposit: <math>8000 \div 200 = 40</math> months. Since <math>40 \div 12 \approx 3.3</math>, that is about <math>3\frac{1}{3}</math> years.</p> <p>23. Use <math>A = P(1+r)^t = 5000(1.05)^2</math>. Since <math>1.05^2 = 1.1025</math>, the value is <math>5000 \times 1.1025 = \\$5,512.50</math>.</p> <p>24. Anna: <math>75 \times 12 \times 4 = \\$3,600</math>. Ben: <math>80 \times 52 \times 4 = \\$16,640</math>. Ben saves <math>16640 - 3600 = \\$13,040</math> more.</p> |
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