# ALGEBRA I

The following ten California mathematics academic content standards from the Algebra I strand are assessed on the CAHSEE by 12 test questions and are represented in this booklet by 39 released test questions. These questions represent only a few of the ways in which these standards may be assessed on the CAHSEE.

| ALGEBRA I | |
|---|---|
| **Standard Set 2.0** | **Students understand and use such operations as taking the opposite, finding the reciprocal, and taking a root, ~~and raising to a fractional power~~. They understand and use the rules of exponents.*** |
| **Standard Set 3.0** | **Students solve equations and inequalities involving absolute values.** |
| **Standard Set 4.0** | **Students simplify expressions before solving linear equations and inequalities in one variable, such as $3(2x-5) + 4(x-2) = 12$.** |
| **Standard Set 5.0** | **Students solve multistep problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step.** |
| **Standard Set 6.0** | **Students graph a linear equation and compute the *x*- and *y*- intercepts (e.g., graph $2x + 6y = 4$). ~~They are also able to sketch the region defined by linear inequality (e.g., they sketch the region defined by $2x + 6y < 4$).~~*** |
| **Standard Set 7.0** | **Students verify that a point lies on a line, given an equation of the line. Students are able to derive linear equations ~~by using the point-slope formula.~~*** |
| **Standard Set 8.0** | **Students understand the concepts of parallel lines ~~and perpendicular lines~~ and how their slopes are related. ~~Students are able to find the equation of a line perpendicular to a given line that passes through a given point.~~*** |
| **Standard Set 9.0** | **Students solve a system of two linear equations in two variables algebraically and are able to interpret the answer graphically. Students are able to solve a system of two linear inequalities in two variables and to sketch the solution sets.** |
| **Standard Set 10.0** | **Students add, subtract, multiply, and divide monomials and polynomials. Students solve multistep problems, including word problems, by using these techniques.** |
| **Standard Set 15.0** | **Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.** |

* The crossed-out portion of this standard is not assessed on the CAHSEE, but is still included in grade-level standards.

**178.** If $x = -7$, then $-x =$

**A** $-7$

**B** $-\frac{1}{7}$

**C** $\frac{1}{7}$

**D** $7$

M02863

**179.** The perimeter, $P$, of a square may be found by using the formula $\left(\frac{1}{4}\right)P = \sqrt{A}$, where $A$ is the area of the square. What is the perimeter of the square with an area of 36 square inches?

**A** 9 inches

**B** 12 inches

**C** 24 inches

**D** 72 inches

M00057

**180.** What is the reciprocal of $\frac{ax^2}{y}$?

**A** $-\frac{ax^2}{y}$

**B** $-\frac{y}{ax^2}$

**C** $\frac{ax^2}{y}$

**D** $\frac{y}{ax^2}$

M13174

**181.** If $x$ is an integer, what is the solution to $|x - 3| < 1$?

**A** $\{-3\}$

**B** $\{-3, -2, -1, 0, 1\}$

**C** $\{3\}$

**D** $\{-1, 0, 1, 2, 3\}$

M03035

**182.** If $x$ is an integer, which of the following is the solution set for $3|x| = 15$?

**A** $\{0, 5\}$

**B** $\{-5, 5\}$

**C** $\{-5, 0, 5\}$

**D** $\{0, 45\}$

M00059

**183.** What are all the possible values of $x$ such that $10|x| = 2.5$?

**A** 0.25 and $-0.25$

**B** 4 and $-4$

**C** 4.5 and $-4.5$

**D** 25 and $-25$

M12992

**184. Which of the following is equivalent to $4(x+5)-3(x+2)=14$?**

**A** $4x+20-3x-6=14$

**B** $4x+5-3x+6=14$

**C** $4x+5-3x+2=14$

**D** $4x+20-3x-2=14$

M02936

**185. Which of the following is equivalent to $9-3x>4(2x-1)$?**

**A** $13<11x$

**B** $13>11x$

**C** $10>11x$

**D** $6x>0$

M02531

$$\frac{20}{x}=\frac{4}{x-5}$$

**186. Which of the following is equivalent to the equation shown above?**

**A** $x(x-5)=80$

**B** $20(x-5)=4x$

**C** $20x=4(x-5)$

**D** $24=x+(x-5)$

M02403

**187. Which of the following is equivalent to $1-2x>3(x-2)$?**

**A** $1-2x>3x-2$

**B** $1-2x>3x-5$

**C** $1-2x>3x-6$

**D** $1-2x>3x-7$

M02231

**188. Which equation is equivalent to $\frac{x+3}{8}=\frac{2x-1}{5}$?**

**A** $5x+3=16x-1$

**B** $5x+15=16x-8$

**C** $8x+3=10x-1$

**D** $8x+24=10x-5$

M13117

**189. Which equation is equivalent to $2x+2-4x=6(x-2)$?**

**A** $-2x+2=6x-12$

**B** $-2x+2=6x-2$

**C** $2x+2=6x-12$

**D** $2x+2=6x-2$

M13109

**190. Colleen solved the equation $2(2x + 5) = 8$ using the following steps.**

**Given:** $2(2x + 5) = 8$

**Step 1:** $4x + 10 = 8$

**Step 2:** $4x = -2$

**Step 3:** $x = -\frac{1}{2}$

**To get from Step 2 to Step 3, Colleen—**

**A** divided both sides by 4.

**B** subtracted 4 from both sides.

**C** added 4 to both sides.

**D** multiplied both sides by 4.

M03139

**191. Solve for $x$.**

$$5(2x - 3) - 6x < 9$$

**A** $x < -1.5$

**B** $x < 1.5$

**C** $x < 3$

**D** $x < 6$

M02938

**192. Which inequality represents the solution of $(11x + 2) + (6x + 4) + (x + 5) > 90$?**

**A** $x > \frac{79}{18}$

**B** $x > \frac{79}{17}$

**C** $x > \frac{101}{18}$

**D** $x > \frac{101}{17}$

M20669

**193. What is the $y$-intercept of the line $2x - 3y = 12$?**

**A** (0, −4)

**B** (0, −3)

**C** (2, 0)

**D** (6, 0)

M02591

**194. What are the coordinates of the $x$-intercept of the line $3x + 4y = 12$?**

**A** (0, 3)

**B** (3, 0)

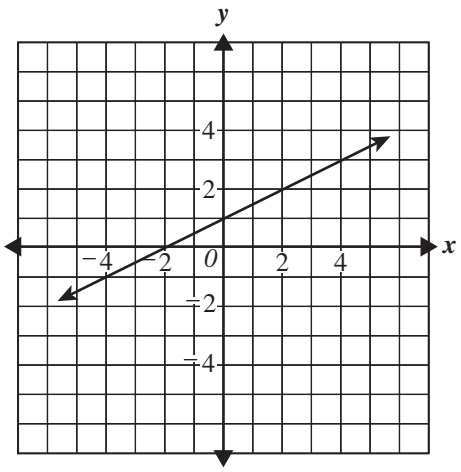
**C** (0, 4)

**D** (4, 0)

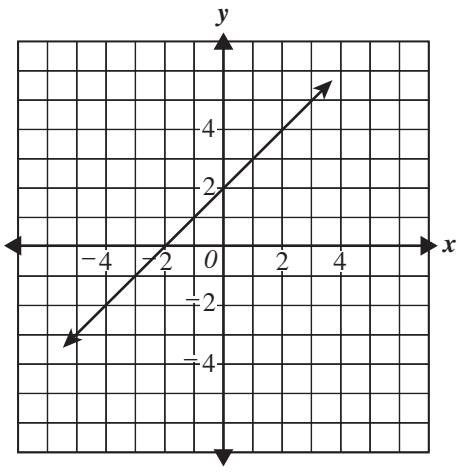
M02462

**195. Which of the following is the graph of $y = \frac{1}{2}x + 2$?**

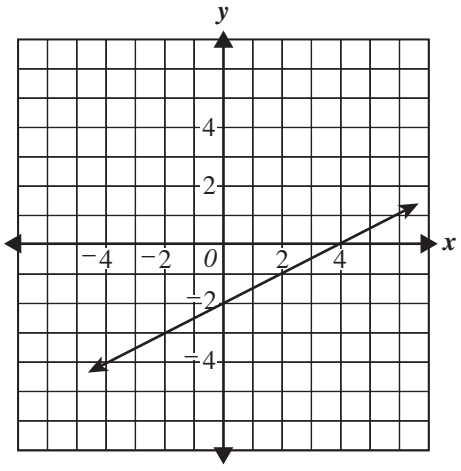
**A**



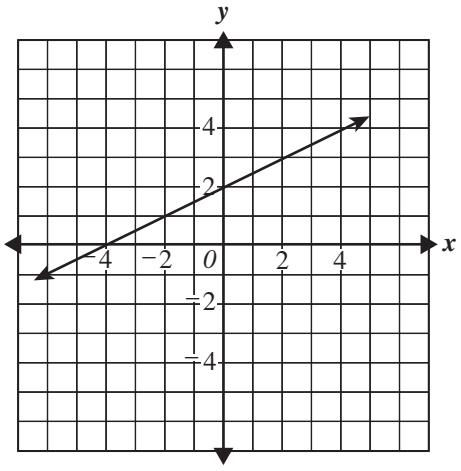

**C**




**B**



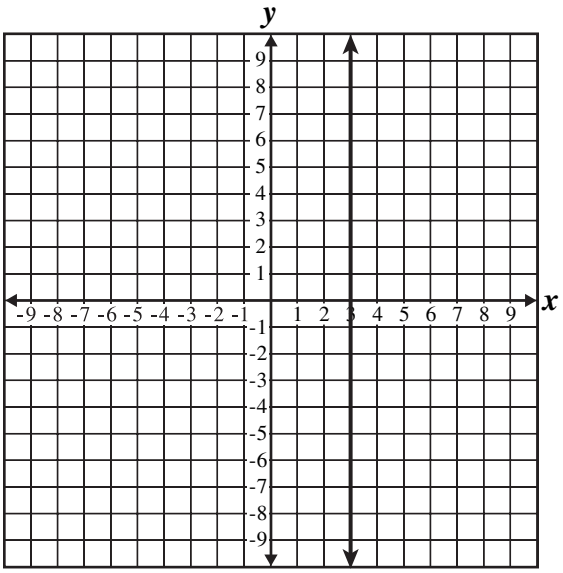

**D**



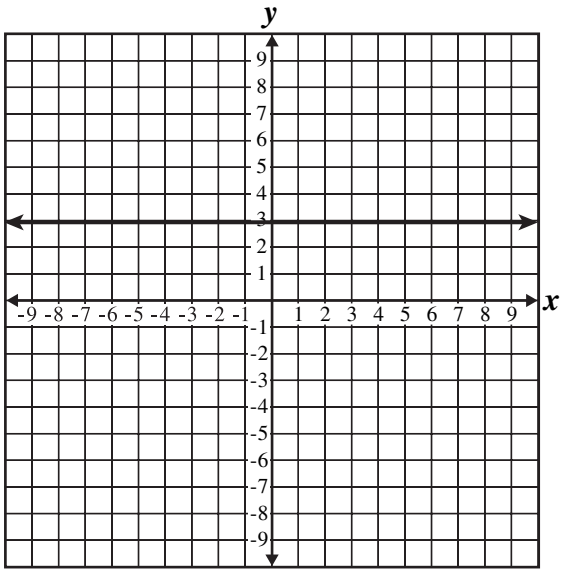

M02026

**196. What is the graph of the equation $x = 3$?**

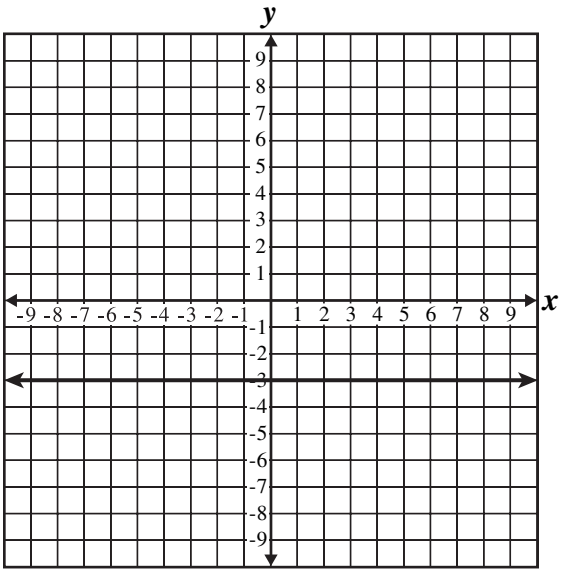
**A**



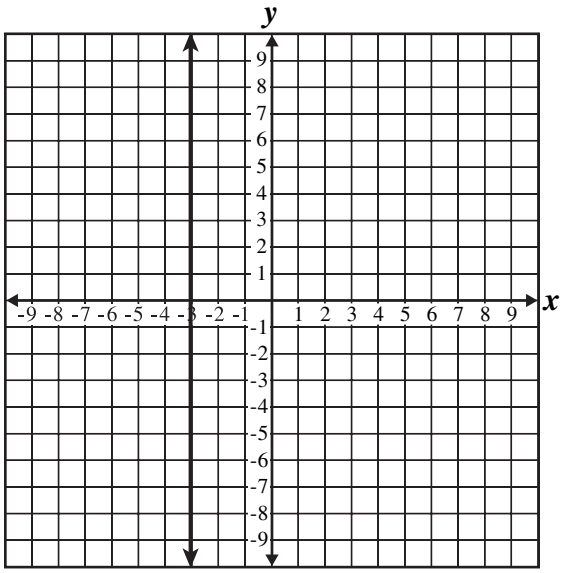

**C**




**B**




**D**




M13541

**197. What is the *y*-intercept of the line represented by the equation $x + 4y = 3$?**

**A** $\frac{3}{4}$

**B** $\frac{4}{3}$

**C** 3

**D** 4

M21492

**198. Which of the following points lies on the line $y = x$?**

**A** $(-4, -4)$

**B** $(-4, 4)$

**C** $(4, -4)$

**D** $(-4, 0)$

M02594

**199. Which of the following points lies on the line $4x + 5y = 20$?**

**A** (0, 4)

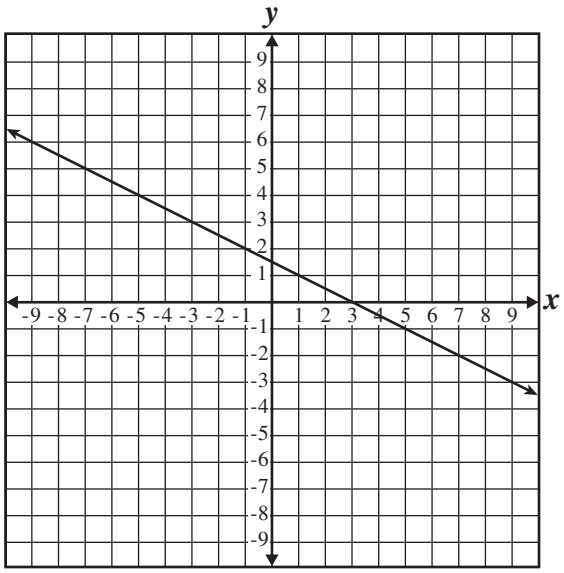
**B** (0, 5)

**C** (4, 5)

**D** (5, 4)

M02565

**200. Which equation represents the line on the graph below?**




**A** $x + 2y = 3$

**B** $x + 2y = 5$

**C** $2x + y = 9$

**D** $4x + 2y = 3$

M22072

**201. What is the slope of a line parallel to the line $y = \frac{1}{3}x + 2$?**

**A** $-3$

**B** $-\frac{1}{3}$

**C** $\frac{1}{3}$

**D** $2$

M02653

**202. Which of the following statements describes parallel lines?**

**A** Same $y$-intercept but different slopes

**B** Same slope but different $y$-intercepts

**C** Opposite slopes but same $x$-intercepts

**D** Opposite $x$-intercepts but same $y$-intercept

M02610

**203. Which of the following could be the equation of a line parallel to the line $y = 4x - 7$?**

**A** $y = \frac{1}{4}x - 7$

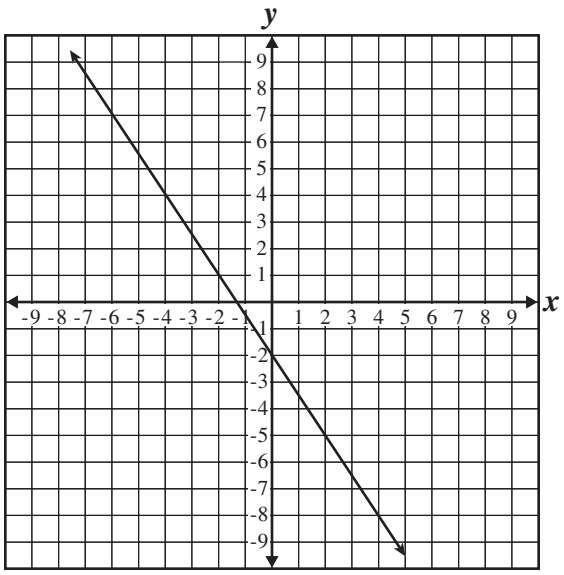
**B** $y = 4x + 3$

**C** $y = -4x + 3$

**D** $y = -\frac{1}{4}x - 7$

M02651

**204. What is the slope of a line parallel to the line below?**




**A** $-\frac{3}{2}$

**B** $-\frac{2}{3}$

**C** $\frac{2}{3}$

**D** $\frac{3}{2}$

M12410

$$\begin{cases} 7x + 3y = -8 \\ -4x - y = 6 \end{cases}$$

**205. What is the solution to the system of equations shown above?**

**A** $(-2, -2)$

**B** $(-2, 2)$

**C** $(2, -2)$

**D** $(2, 2)$

M02956

$$\begin{cases} y = 3x - 5 \\ y = 2x \end{cases}$$

**206. What is the solution of the system of equations shown above?**

**A** (1, –2)

**B** (1, 2)

**C** (5, 10)

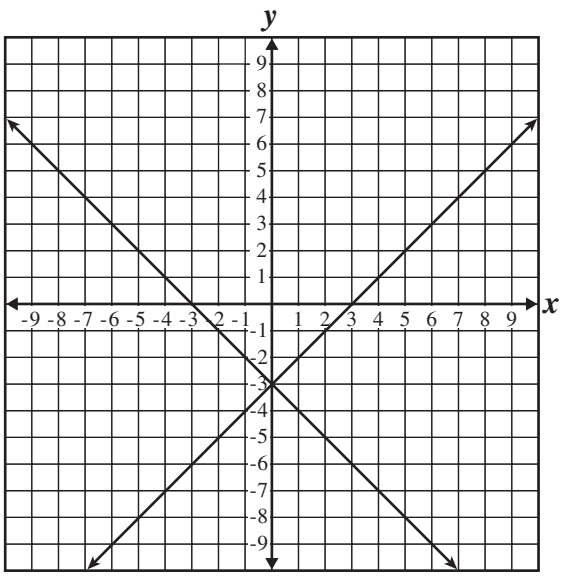
**D** (–5, –10)

M02649

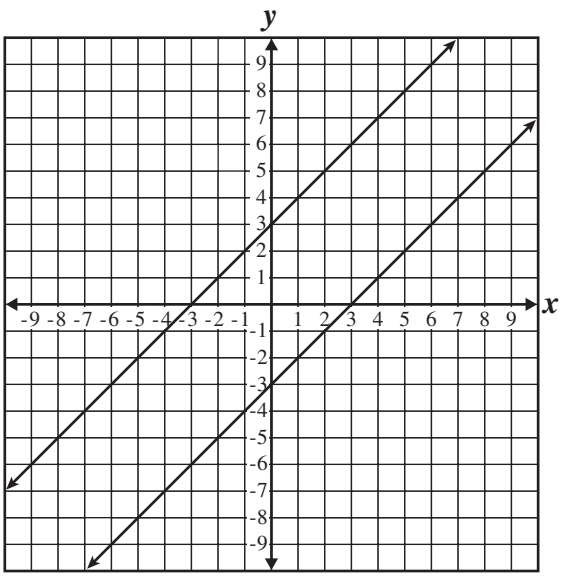
**207. Which graph represents the system of equations shown below?**

$$y = -x + 3$$
$$y = x + 3$$

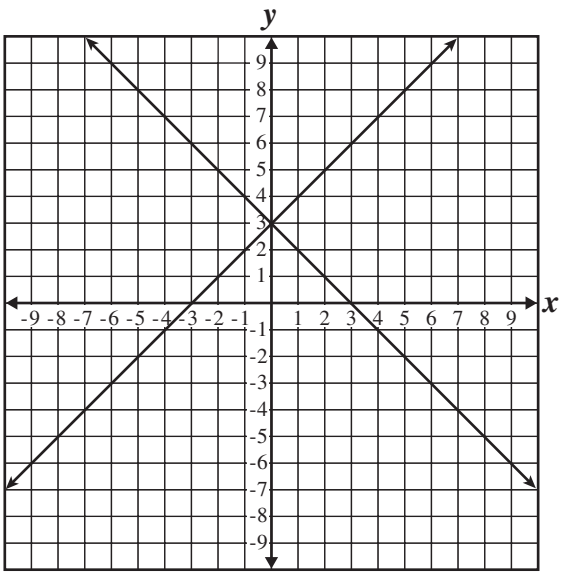
**A**



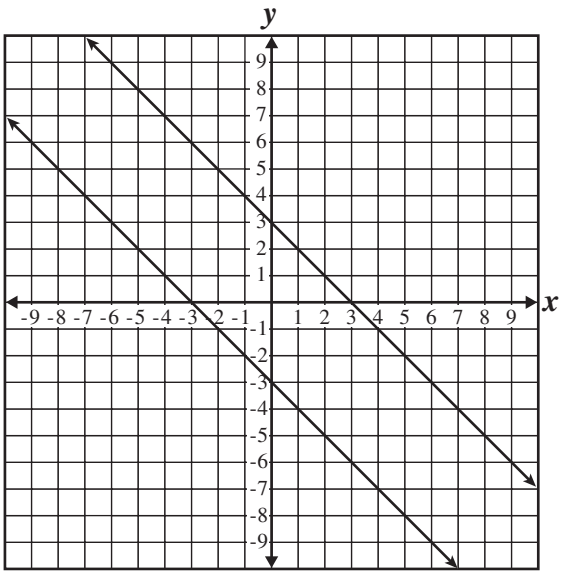

**C**




**B**




**D**




M12449

**208. What is the $x$-coordinate of the solution to the following pair of equations?**

$$\begin{aligned} 2x+3y&=7\\ 3x-y&=5 \end{aligned}$$

**A** $-2$

**B** $-1$

**C** $1$

**D** $2$

M23086

**209. Simplify.**

$$\left(x^2-3x+1\right)-\left(x^2+2x+7\right)$$

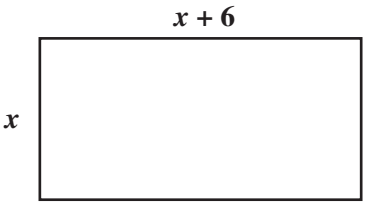
**A** $x-6$

**B** $-x+8$

**C** $-5x-6$

**D** $2x^2-x+8$

M03355




**210. The length of the rectangle above is 6 units longer than the width. Which expression could be used to represent the area of the rectangle?**

**A** $x^2+6x$

**B** $x^2-36$

**C** $x^2+6x+6$

**D** $x^2+12x+36$

M00402

**211. Simplify.**

$$\frac{4x^3+2x^2-8x}{2x}$$

**A** $2x^2+x-4$

**B** $4x^2+2x-8$

**C** $2x^2+2x^2-8x$

**D** $8x^4+4x^3-16x^2$

M03354

**212. Mr. Jacobs can correct 150 quizzes in 50 minutes. His student aide can correct 150 quizzes in 75 minutes. Working together, how many minutes will it take them to correct 150 quizzes?**

**A** 30

**B** 60

**C** 63

**D** 125

M03000

**213. Ricardo runs 10 miles each Saturday. If he doubles his usual speed, he can run the 10 miles in one hour less than his usual time. What is his usual speed?**

**A** 2 miles per hour

**B** 3 miles per hour

**C** 4 miles per hour

**D** 5 miles per hour

M02561

**214. Yoshi has exactly one dollar in dimes (10 cents) and nickels (5 cents). If Yoshi has twice as many dimes as nickels, how many nickels does she have?**

**A** 4

**B** 8

**C** 12

**D** 15

M02410

**215. Diane delivers newspapers for $5 a day plus $0.04 per newspaper delivered. Jeremy delivers newspapers for $2 a day plus $0.10 per newspaper delivered. How many newspapers would Diane and Jeremy each need to deliver in order to earn the same amount?**

**A** 30

**B** 50

**C** 75

**D** 83

M02614

**216. A student store sold a total of 55 shirts for $620. The shirts sold were either red or white. If the red shirts sold for $12 each and the white sold for $10 each, how many of each color of shirt were sold?**

**A** 20 red
35 white

**B** 27 red
28 white

**C** 28 red
27 white

**D** 35 red
20 white

M32234

| Question Number | Correct Answer | Standard | School Year of Exam |
|---|---|---|---|
| 178 | D | 1A2.0 | 2001–2002 |
| 179 | C | 1A2.0 | 2001–2002 |
| 180 | D | 1A2.0 | 2004–2005 |
| 181 | C | 1A3.0 | 2001–2002 |
| 182 | B | 1A3.0 | 2000–2001 |
| 183 | A | 1A3.0 | 2006–2007 |
| 184 | A | 1A4.0 | 2001–2002 |
| 185 | B | 1A4.0 | 2001–2002 |
| 186 | B | 1A4.0 | 2000–2001 |
| 187 | C | 1A4.0 | 2000–2001 |
| 188 | B | 1A4.0 | 2006–2007 |
| 189 | A | 1A4.0 | 2007–2008 |
| 190 | A | 1A5.0 | 2002–2003 |
| 191 | D | 1A5.0 | 2001–2002 |
| 192 | A | 1A5.0 | 2005–2006 |
| 193 | A | 1A6.0 | 2000–2001 |
| 194 | D | 1A6.0 | 2000–2001 |
| 195 | D | 1A6.0 | 2001–2002 |
| 196 | A | 1A6.0 | 2005–2006 |
| 197 | A | 1A6.0 | 2007–2008 |
| 198 | A | 1A7.0 | 2002–2003 |
| 199 | A | 1A7.0 | 2001–2002 |
| 200 | A | 1A7.0 | 2006–2007 |
| 201 | C | 1A8.0 | 2001–2002 |
| 202 | B | 1A8.0 | 2000–2001 |
| 203 | B | 1A8.0 | 2000–2001 |
| 204 | A | 1A8.0 | 2004–2005 |
| 205 | B | 1A9.0 | 2001–2002 |
| 206 | C | 1A9.0 | 2000–2001 |
| 207 | B | 1A9.0 | 2003–2004 |
| 208 | D | 1A9.0 | 2007–2008 |
| 209 | C | 1A10.0 | 2002–2003 |
| 210 | A | 1A10.0 | 2000–2001 |
| 211 | A | 1A10.0 | 2003–2004 |
| 212 | A | 1A15.0 | 2001–2002 |
| 213 | D | 1A15.0 | 2004–2005 |
| 214 | A | 1A15.0 | 2005–2006 |
| 215 | B | 1A15.0 | 2006–2007 |
| 216 | D | 1A15.0 | 2007–2008 |