Questions 1–4 on Competency Test

1) Simplify. $30 \div 5 \cdot 14 - (-2)$

a) 51 b) 560 c) 492 d) 102

2) Simplify. $[6 \div (-5)^2 + (6)(7)] \div [6(7 - 4)]$

a) 1 b) $\frac{259}{38}$ c) 2 d) $\frac{73}{18}$

3) Simplify. $6(-9) + |2 - 18|$

a) 70 b) –70 c) 38 d) –38

4) Simplify. $-2(4x + 1) - (3x + 5) - 4x + 6$

a) $-9x + 9$ b) $-15x + 3$ c) $-15x - 1$ d) $15x + 6$

Questions 5–8 on Competency Test

1) Evaluate $x^3 + y - 5$ for $x = -3, y = -10$

a) -28 b) -42 c) -6 d) -24

2) Solve. $3(2z - 2) = 5(z + 3)$

a) -9 b) 12 c) 9 d) 21

3) Solve. $\frac{7}{2}x + 9 = \frac{1}{4}$

a) $\frac{2}{7}$ b) $-\frac{71}{28}$ c) $\frac{33}{14}$ d) $-\frac{5}{2}$

4) Solve $8x - 7y = 5$ for y

a) $y = \frac{7x - 5}{8}$ b) $y = 7(8x - 5)$ c) $y = \frac{8x - 5}{7}$ d) $y = \frac{5 - 8x}{7}$

Questions 9-11 on Competency Test

1) Translate the statement into a mathematical equation.

3 times a number is 14 more than 2 times the number. Find the number.

A) $2x = 3x + 14$ B) $3x = 2x + 14$ C) $3x + 2x = 14$ D) $3x - 2x = 14$

2) In Trisville, there are three buildings of which the shortest is 101 ft shorter than the tallest. The middle one is 52 ft shorter than the tallest. If the sum of the heights of the three buildings is 603 ft, how tall is the tallest building?

A) 502 ft B) 252 ft C) 551 ft D) 450 ft

3) If three times the smaller of two consecutive integers is added to four times the larger, the result is 67. Find the smaller integer.

A) 9 B) 8 C) 10 D) 27

4) From a point on a straight road, two cars are driven in opposite directions, one at 61 miles per hour and the other at 24 miles per hour. In how many hours will they be 425 miles apart?

A) 4 hours B) 3 hours C) 5 hours D) 6 hours

5) Find the length of a rectangular lot with a perimeter of 124 meters if the length is 4 meters more than the width.

A) 62 m B) 29 m C) 66 m D) 33 m

6) Identify the proportion listed below that solves this problem.

In a sample of 74 widgets, 3 were defective. How many defective widgets would you expect in a sample of 592 widgets?

A) $\frac{74}{592} = \frac{3}{x}$ B) $\frac{x}{74} = \frac{3}{592}$ C) $\frac{592}{74} = \frac{3}{x}$ D) $\frac{3}{592} = \frac{74}{x}$

Questions 12-15 on Competency Test

1) Simplify. $\left(\frac{x^3y}{z^4}\right)^4$

a) $\frac{x^{12}y^4}{z^{16}}$ b) $\frac{x^7y^4}{z^8}$ c) $\frac{x^{12}y^4}{z^4}$ d) $\frac{x^4y^{12}}{z^{16}}$

2) Simplify. $\frac{(9z^3)^{-2}(9z^{-6})^2}{(9z^{-3})^2}$

a) $\frac{1}{81z^{12}}$ b) $\frac{1}{81z^{18}}$ c) $\frac{81}{z^{12}}$ d) $81z^{12}$

3) Simplify. $\frac{(8x^2)^0}{(x^4)^5}$

a) $\frac{1}{x^{20}}$ b) x^{20} c) $\frac{8}{x^{18}}$ d) 0

4) Express the number in scientific notation. 0.00004776

a) 4.776×10^5 b) 4.776×10^4 c) 4.776×10^{-5} d) 4.776×10^{-4}

5) Write in standard form. 4.37×10^6

a) 262.2 b) 43,700,000 c) 4,370,000 d) 437,000

Questions 16–20 on Competency Test

1) Subtract. $\left(2x^4+2x^3-7x^2+8\right)-\left(6x^4+7x^3+2x^2-4\right)$

a) $-4x^4+9x^3-5x^2+4$

b) $8x^4+9x^3-5x^2+4$

c) $8x^4+9x^3-5x^2+12$

d) $-4x^4-5x^3-9x^2+12$

2) Multiply. $-6a^3x^7(-7a^6x^6+7x^5+7a)$

a) $42a^9x^{13}-42a^3x^{12}-42a^4x^7$

b) $42a^9x^{13}-42a^3x^{12}+7a$

c) $42a^6x^6-42x^5-42a$

d) $42a^9x^{13}+7x^5+7a$

3) Multiply. $(x-3y)(x-4y)$

a) $x^2-10xy+12y^2$

b) $x^2-7xy-7y^2$

c) $x-7xy+12y$

d) $x^2-7xy+12y^2$

4) Factor completely. $72x^9y^8-64x^6y^5-40x^2y^2$

a) $8x^2(9x^7y^8-8x^4y^5-5y^2)$

b) $8x^2y^2(9x^7y^6-8x^4y^3-5)$

c) No common factor

d) $8(9x^9y^8-8x^6y^5-5x^2y^2)$

5) Factor completely. $81x^2-64$

a) $(9x+8)(9x-8)$

b) $(9x+8)^2$

c) Prime

d) $(9x-8)^2$

Questions 21-25 on Competency Test

1) Factor completely. $6x^4 - 4x^2 + 15x^2 - 10$

a) $(2x^4 + 5)(3x - 2)$ b) $(2x^2 - 5)(3x^2 + 2)$ c) $(6x^2 - 5)(x^2 + 2)$ d) $(2x^2 + 5)(3x^2 - 2)$

2) Identify a factor of the following trinomial: $4x^2 + 8x + 3$

a) $(2x + 1)$ b) $(2x - 1)$ c) $(x + 3)$ d) $(4x + 1)$

3) Simplify. $\dfrac{y^2 - 3y - 18}{y^2 + 2y - 48}$

a) $\dfrac{-3y - 3}{2y - 8}$ b) $\dfrac{-3y - 18}{2y - 48}$ c) $-\dfrac{y^2 - 3y - 18}{y^2 + 2y - 48}$ d) $\dfrac{y + 3}{y + 8}$

4) Solve. $x^2 + 6x - 40 = 0$

a) $-10, 4$ b) $10, -4$ c) $-10, 1$ d) $10, 4$

5) Solve. $9y^2 + 21y + 10 = 0$

a) $-\frac{2}{3}, -\frac{5}{3}$ b) $\frac{2}{3}, -\frac{5}{3}$ c) $-\frac{2}{9}, -\frac{1}{2}$ d) $\frac{2}{3}, \frac{5}{3}$

Questions 26-28 on Competency Test

1) Simplify. $\sqrt{8x^3y^5z^{16}}$

a) $2xy^2z^8\sqrt{2xy}$ b) $2x^3y^4z^{16}\sqrt{2xy}$ c) $xy^2z^8\sqrt{8xy}$ d) $2xy^2z^4\sqrt{2xy}$

2) Simplify. $\sqrt{3}(\sqrt{12}-\sqrt{3})$

a) $6-\sqrt{3}$ b) 9 c) 3 d) $3\sqrt{2}-3$

3) Solve. $-21r+18 \le -3(6r-9)$

a) $r \ge -3$ b) $r \ge 3$ c) $r \le -3$ d) $r \le 3$

Questions 29–30 on Competency Test

1) Find the x-intercept of the equation. $x + y = 4$

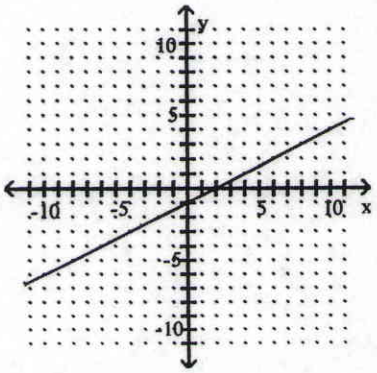
a) (2, 0) b) (2, 4) c) (4, 0) d) (0, 4)

2) Find the y-intercept of the equation. $-2x + 5y = 10$

a) (–5, 0) b) (0, 2) c) (0, –5) d) (2, 0)

3) Choose the graph of the equation. $y = -2x - 1$

a)



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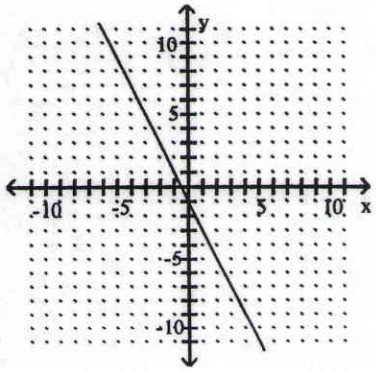

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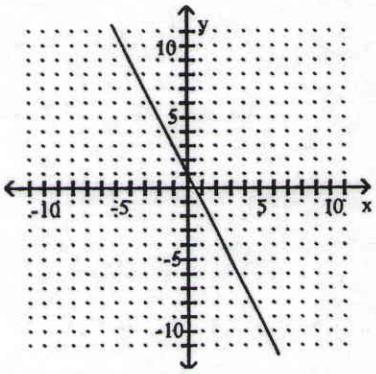

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