

Algebra 1 Team Test

$$\#1 \quad 10,000 \times \$87.38 = \$873,800$$

$$10,000 \times \$87\frac{3}{8} = \$873,750$$

$\sqrt{(87.375)}$

The difference is $\boxed{\$50}$

$$\begin{aligned} \#2 \quad \frac{(-2x^{-3}y^{-4})^3}{(-3x^{-4}y^2z)^{-2}} &= \frac{-8x^{-9}y^{-12}}{(-3)^{-2}x^8y^{-4}z^{-2}} = \frac{-8y^4z^2(-3)^2}{x^8 \cdot x^9 \cdot y^{12}} \\ &= \frac{-8(9)z^2}{x^{17}y^8} = \boxed{\frac{-72z^2}{x^{17}y^8}} \end{aligned}$$

#3 $x = \#$ of albums
 $y = \#$ of downloads

$$0.04x + 0.0035y = 7160$$

$$500x = y$$

$$0.04x + 0.0035(500x) = 7160$$

$$0.04x + 1.75x = 7160$$

$$1.79x = 7160$$

$$x = \boxed{\begin{array}{l} 4000 \text{ albums} \\ 2,000,000 \text{ downloads} \end{array}}$$

$$\#4 \quad 170 + 200 + 77.5x = 1765 \quad x = \# \text{ of packages}$$

$$77.5x = 1395$$

$$x = \boxed{18 \text{ packages}}$$

$$\#5 \quad 7x + 8y - 12 = 0 \quad (-2, 5)$$

$$8y = -7x + 12 \quad m_1 = \frac{8}{7}$$

$$y = -\frac{7}{8}x + \frac{12}{8}$$

$$m = -\frac{7}{8}$$

$$y - 5 = \frac{8}{7}(x + 2)$$

$$y - 5 = \frac{8}{7}x + \frac{16}{7}$$

$$7y - 35 = 8x + 16$$

$$\boxed{8x - 7y = -51}$$

$$\#6 \quad 150x + 250(32) = 14,600 \quad x = \text{price/acre of corn}$$

$$150x + 8000 = 14,600$$

$$150x = 6600$$

$$x = \boxed{\$44/\text{acre for corn cultivation}}$$

$$\#7 \quad 7(x+3) = 2y+25 \rightarrow 7x+21 = 2y+25$$

$$3(x-6) = -2(y+1) \rightarrow 3x-18 = -2y-2$$

$$\begin{array}{r} 7x - 2y = 4 \\ + 3x + 2y = 16 \\ \hline 10x = 20 \end{array}$$

$$\boxed{x=2}$$

$$\begin{array}{r} 7(2) - 2y = 4 \\ 14 - 2y = 4 \end{array}$$

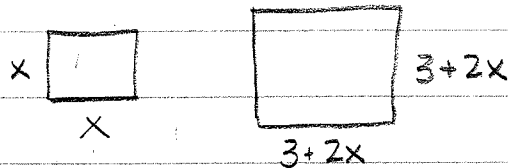
$$-2y = -10$$

$$\boxed{y=5}$$

#8

$$\begin{array}{r}
 \boxed{x^2 + 2x + 1} \\
 \hline
 x^2 - 3x - 2 \) \ x^4 - x^3 - 7x^2 - 7x - 2 \\
 \underline{-x^4 - 3x^3 - 2x^2} \downarrow \\
 2x^3 - 5x^2 - 7x \\
 \underline{-2x^3 - 6x^2 - 4x} \downarrow \\
 x^2 - 3x - 7 \\
 \underline{-x^2 - 6x - 12}
 \end{array}$$

#9



$$\begin{aligned}
 (3+2x)(3+2x) &= 24 + x^2 \\
 9 + 6x + 6x + 4x^2 &= 24 + x^2 \\
 3x^2 + 12x - 15 &= 0 \\
 3(x^2 + 4x - 5) &= 0 \\
 3(x+5)(x-1) &= 0 \\
 3 \neq 0 \quad x+5=0 \quad x-1=0 \\
 x &= -5 \quad x=1
 \end{aligned}$$

old side = $\boxed{1 \text{ meter}}$ new side = $3 + 2(1) = \boxed{5 \text{ meters}}$

#10 4900 gallon 3500 gallons in 4hr

$$\frac{3500}{4} = \frac{4900}{x}$$

5.6 hours

$$3500x = 4900(4)$$

#11 $t = k\sqrt{d}$

$$2 = k\sqrt{64}$$

$$t = 0.25(\sqrt{196}) = 3.5 \text{ seconds}$$

$$k = 0.25$$

$$\#12 (x^2 + 2x + 1) + (y^2 - 6y + 9) = -5 + 1 + 9$$

$$(x+1)^2 + (y-3)^2 = -5 + 1 + 9$$

$$(x+1)^2 + (y-3)^2 = 5$$

center $(-1, 3)$

radius = $\sqrt{5}$

$$\#13 y^2 = \frac{1}{2}x$$

$$y = x - 1$$

$$y = 2 - 1 = 1$$

$$y = \frac{1}{2} - 1 = -\frac{1}{2}$$

$$(x-1)^2 = \frac{1}{2}x$$

$$x^2 - 2x + 1 = \frac{1}{2}x$$

$(2, 1), (\frac{1}{2}, -\frac{1}{2})$

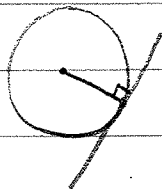
$$x^2 - \frac{5}{2}x + 1 = 0$$

$$x = \frac{\frac{5}{2} \pm \sqrt{\frac{25}{4} - 4(1)(1)}}{2} = \frac{\frac{5}{2} \pm \sqrt{\frac{9}{4}}}{2} = \frac{\frac{5}{2} \pm \frac{3}{2}}{2} = 2 \text{ or } \frac{1}{2}$$

$$\#14 \quad r(x) = \frac{3x}{x+4} \quad x \neq -4$$

$$r(2a-5) = \frac{3(2a-5)}{2a-5+4} = \frac{6a-15}{2a-1}$$

#15



$$x^2 + y^2 = 25 \quad (3, -4)$$

$(0, 0)$ $(3, -4)$

$$m = \frac{-4-0}{3-0} = \frac{-4}{3} \quad m_{\perp} = \frac{3}{4}$$

$$y+4 = \frac{3}{4}(x-3)$$

#16 175ft

$$d = \frac{x^2}{20} + x$$

$$175 = \frac{x^2}{20} + x$$

$$3500 = x^2 + 20x$$

$$0 = x^2 + 20x - 3500$$

$$x = \frac{-20 \pm \sqrt{400 - 4(1)(-3500)}}{2(1)} = \frac{-20 \pm 120}{2} = 50 \text{ or } -70$$

50mph