

(20 pts) NAME (printed neatly): \_\_\_\_\_

Quiz Grade: \_\_\_\_\_

**Directions for taking quizzes:** Write your name legibly where indicated on *both* sides of this paper. On the other side of this paper, circle your correct section number and the letter category which corresponds to the first letter of your last name. After you have completed this quiz, fold this paper lengthwise such that this side is on the inside of the fold (so your quiz grade will be hidden when returning papers). Turn your quiz in on the appropriate pile as determined by the first letter of your last name. You may not share calculators.

1. Given the line  $y = \frac{-2}{5}x + 6$ .

a. (10 pts) What is the slope of the line perpendicular to the given line?

The slope of the given line is  $m = \frac{-2}{5}$ .

The slope of the line perpendicular to the given line is  $m_{\perp} = \frac{5}{2}$ .

b. (15 pts) What is the equation of the horizontal line that passes through the given line at  $x = 10$ ?

$$y = \frac{-2}{5}x + 6$$

$$y = \left(\frac{-2}{5}\right)(10) + 6 = 2 \text{ so we have the point } (10, 2).$$

The equation of the horizontal line is  $y = 2$ .

2. A tractor is originally purchased for \$48,000. After 8 years, the tractor is worth \$19360.

a. (15 pts) Find a linear equation for the value,  $V$ , of the tractor as a function of time,  $t$ , in years.

$$(t, V), \quad (0, 48000), \quad (8, 19360)$$

$$m = \frac{19360 - 48000}{8 - 0} = \frac{-28640}{8} = -3580$$

$$V - 48000 = -3580(t - 0)$$

$$V(t) = -3580t + 48000$$

b. (10 pts) What is the rate of depreciation of the tractor?

The depreciation rate is **\$3580 per year**.

c. (10 pts) What is the tractor worth after 10 years?

$$V(10) = -35800 + 48000 = \$12200$$

3. Given the line  $9x - 8y = 24$ .

a. (10 pts) What is the  $x$ -intercept?

$$9x = 24$$

$$x = \frac{8}{3}$$

The  $x$ -intercept is  $\frac{8}{3}$ .

Or as a point, the  $x$ -intercept is  $\left(\frac{8}{3}, 0\right)$ .

b. (10 pts) What is the  $y$ -intercept?

$$-8y = 24$$

$$y = -3$$

The  $y$ -intercept is  $-3$ .

Or as a point, the  $y$ -intercept is  $(0, -3)$ .