Key

Quiz 2
Statistics for Business (22S:008, Bognar) **January 31, 2007**

1. (*10 pts*) On eight randomly selected days, the amount of daily revenue (in thousands) for a small business was

$$8, 9, 8, 9, 8, 10, 9, 11$$

(a) (*6 pts*) Compute the standard deviation s. *Show all of your work using good notation.*

$n = 8$

$\bar{x} = 72/8 = 9$

$$s = \sqrt{\frac{(x_1-\bar{x})^2+\cdots+(x_n-\bar{x})^2}{n-1}} = \sqrt{\frac{(8-9)^2+\cdots+(11-9)^2}{8-1}} = \sqrt{\frac{(8-9)^2\times 3+(9-9)^2\times 3+(11-9)^2+(11-9)^2}{7}}$$

$$= \sqrt{\frac{3+0+1+4}{7}} = \sqrt{\frac{8}{7}} = \sqrt{1.1428} = 1.069$$

(b) (*4 pts*) Compute the interquartile range (IQR).

8 8 8 9 9 9 10 11

$Q_1 = 8$

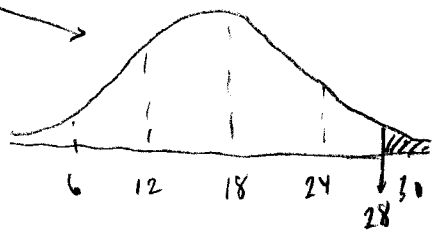
$Q_3 = 9.5$ $\quad IQR = Q_3 - Q_1 = 1.5$

2. (*10 pts*) ACT scores follow a normal distribution with mean $\mu = 18$ and standard deviation $\sigma = 6$.

(a) (*6 pts*) What is the probability that a randomly selected examinee scores above 28? *Show all of your work using good notation.*

$$P(X > 28) = P\left(\frac{X-18}{6} > \frac{28-18}{6}\right) = P(Z > 1.67) = 1 - 0.9525 = 0.0475$$

$X \sim N(18, 6)$



(b) (*4 pts*) According to the empirical rule, what percentile is a score of 24? *Show all of your work using good notation.*

84th percentile