

Questions on 8.3 HW? Quiz Thursday...can you fill out a normal distribution curve and answer questions about the percent under the curve? No z-scores on quiz...

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21 / 44 125%

**Set**

A company makes a mean monthly income of \$20,300 with a standard deviation of \$3,200. In one given month the company makes \$29,500.

4. Find the z-score. 
$$z = \frac{29500 - 20300}{3200} = 2.875 = \underline{\underline{2.88}}$$

5. Assuming the company's monthly income is Normal, what percent of the time does the company make more than this amount? Less than?

$100 - 99.8 = 0.2\%$  →  $99.8\%$

6. What percent of the time does the company make between \$15,000 and \$25,000?

$z\text{-score}(15000)$   $z\text{-score}(25000)$

7. If the company needs to make \$16,400 in order to break even, how likely in a given month is the company to make a profit?

$$z = \frac{16400 - 20300}{3200} = -1.22 \rightarrow 11.12\% \text{ below}$$

$100 - 11.12 = \boxed{88.88\%}$

On the Wechsler Adult Intelligence Scale, an average IQ is 100 with a standard deviation of 15 units.  
(Source: [http://en.wikipedia.org/wiki/Intelligence\\_quotient](http://en.wikipedia.org/wiki/Intelligence_quotient))

8.50 x 11.00 in

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22 / 44 150%

14.  $g(x) = -2(x-3)^2(x+5)(2x-5)^3$

leading coefficient:  $-2$   
(negative)

degree:  $2+1+3=6$  (even degree)

Roots:  $3$ ,  $-5$ ,  $5/2$   
 $m:2$   $m:1$   $m:3$

15. A cubic function with a leading coefficient of 4 and three positive roots.

8.50 x 11.00 in

SAGE REVIEW PACKET:

-Work on #1-15 today

## 8.4 Whoa! That's Weird!

### *A Practice Understanding Task*

Each of the stories below are based upon normal distributions. Rank order these stories from most unusual to most average. (1 is the most unusual, 6 is the most average.) In each case, explain your ranking.



- A. The number of red loops in a box of Tutti-Frutti-O's is normally distributed with mean of 800 loops and standard deviation 120. Tony bought a new box, opened it, and counted 1243 red loops. (It didn't really matter because all the colors are the same flavor anyway.)

Rank \_\_\_\_\_ Explanation: \_\_\_\_\_

- B. The weight of house cats is normally distributed with a mean of 10 pounds and standard deviation 2.1 pounds. My cat, Big Boy, weighs 6 pounds.

Rank \_\_\_\_\_ Explanation: \_\_\_\_\_

- C. The lifetime of a battery is normally distributed with a mean life of 40 hours and a standard deviation of 1.2 hours. I just bought a battery and it died after just 20 hours

Rank \_\_\_\_\_ Explanation: \_\_\_\_\_

- D. The amount that a human fingernail grows in a year is normally distributed with a mean growth of 3.5 cm and a standard deviation of 0.63 cm. My neighbor's thumbnail grew all year without breaking and it is 4.6 cm long with stars and stripes painted on it.

Rank \_\_\_\_\_ Explanation: \_\_\_\_\_

- E. My little brother was digging in the garden and found a giant earthworm that was 35 cm long. The length of earthworms is normally distributed with a mean length of 14 cm and a standard deviation of 5.3 cm.

Rank \_\_\_\_\_ Explanation: \_\_\_\_\_

- F. The mean length of a human pregnancy is 268 days with a standard deviation of 16 days. My aunt just had a premature baby delivered after only 245 days.

Rank \_\_\_\_\_ Explanation: \_\_\_\_\_

Homework

Finish 8.4 "Ready, Set, Go"