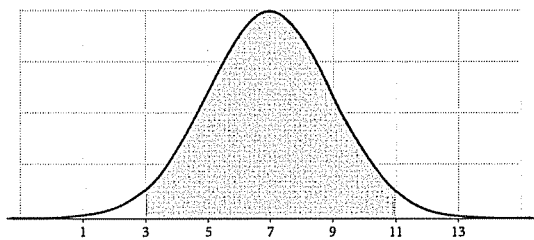
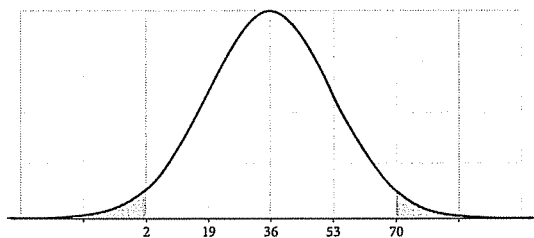


Problem Set 12.9

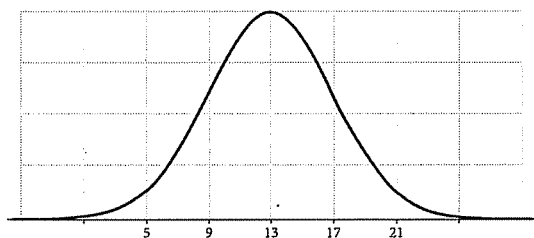
1. Sketch the normal distribution that has a mean of 7 and a standard deviation of 2. Then shade the area under the curve that lies within 2 standard deviations.



2. Sketch the normal distribution that has a mean of 36 and a standard deviation of 17. Then shade the area under the curve that is more than 2 standard deviations away from the mean.

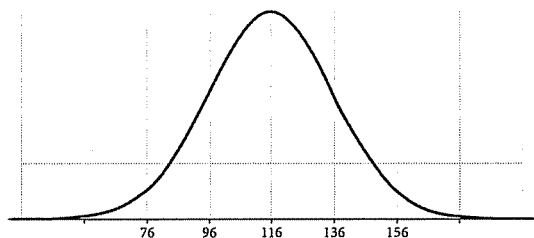


3. Given the normal distribution with a mean of 13 and a standard deviation of 4:



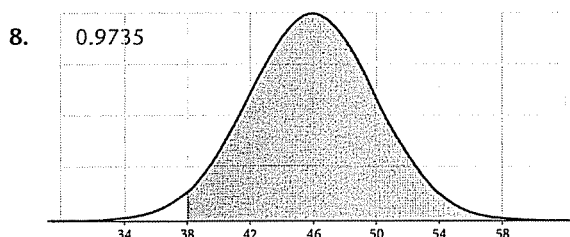
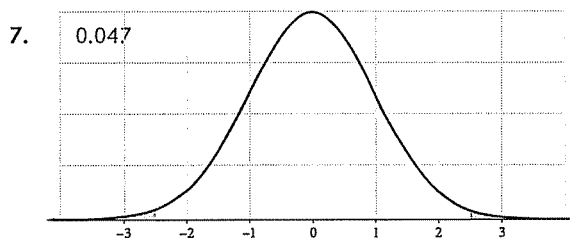
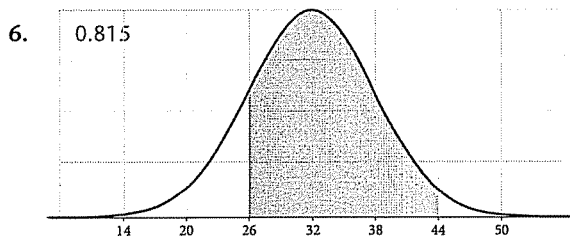
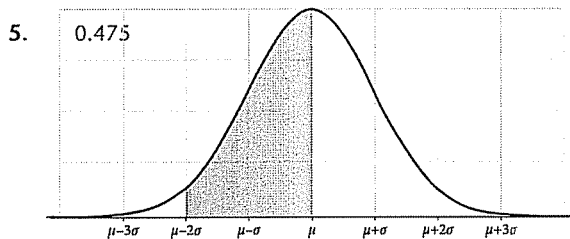
- Find $P(x < 17)$. 0.84
- Find $P(x > 13)$. 0.5
- Find $P(13 < x < 21)$. 0.475

4. Given the normal distribution with a mean of 116 and a standard deviation of 20:



- Find $P(56 < x < 136)$. 0.84
- Find $P(76 < x < 156)$. 0.95
- Find $P(x > 76)$. 0.975

Find the area of the shaded region in each normal distribution.



A normal distribution has a mean of 25 and a standard deviation of 3. Using z-scores, answer the following questions.

- Find the probability of a value between 22 and 28.
- Find the probability of a value between 19 and 28.

9. $P(-1 < x < 1) = 0.68$ 10. $P(-2 < x < 1) = 0.815$

A normal distribution has a mean of 152 and a standard deviation of 15. Using z-scores, answer the following questions.

- Find the probability of a value between 122 and 197.
- Find the probability of a value greater than 137.

11. $P(-2 < x < 3) = 0.9735$ 12. $P(x > -1) = 0.84$

During a 1-hour midterm, the mean minutes that it took students to complete the test was 48 minutes with a standard deviation of 3 minutes.

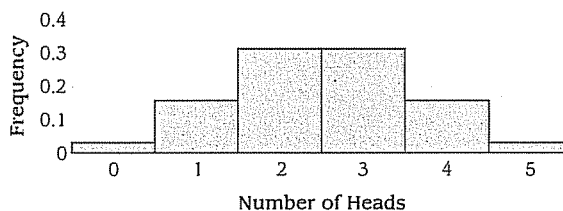
- 13. What percentage of students took more than 54 minutes to complete the midterm? 2.5%
- 14. What percentage of students took between 42 and 51 minutes to complete the midterm? 81.5%
- 15. What percentage of students took more than 57 minutes or less than 42 minutes? 2.65%
- 16. What percent of students took less than 51 minutes to complete the midterm? 84%

Problem Set 12.8

1. b. (table below)

Number of Heads	Frequency	Probability
0	1	$\frac{1}{32} = 0.03125$
1	5	$\frac{5}{32} = 0.15625$
2	10	$\frac{10}{32} = 0.3125$
3	10	$\frac{10}{32} = 0.3125$
4	5	$\frac{5}{32} = 0.15625$
5	1	$\frac{1}{32} = 0.03125$
Sum of Probabilities		$\frac{32}{32} = 1$

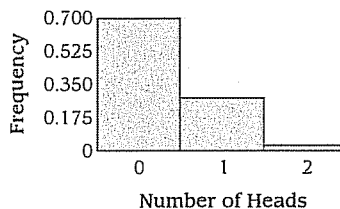
c. (histogram below)



2. b. (table below)

Number of 4s	Frequency	Probability
0	1	$\frac{25}{36} = 0.694$
1	2	$\frac{10}{36} = 0.278$
2	1	$\frac{1}{36} = 0.028$
Sum of Probabilities		$\frac{36}{36} = 1$

c. (histogram below)



5.

Number of Aces	Frequency	Probability
0	1	0.787
1	3	0.197
2	3	0.016
3	1	0.0004

6.

Number of Hearts	Frequency	Probability
0	1	0.316
1	4	0.422
2	6	0.211
3	4	0.047
4	1	0.004

7.

No. of Green M&Ms®	Frequency	Probability
0	1	0.343
1	3	0.441
2	3	0.189
3	1	0.027

8.

No. of Green M&Ms®	Frequency	Probability
0	1	0.027
1	3	0.189
2	3	0.441
3	1	0.343