Name:

Common Core Algebra II

Unit 9

Probability

Mr. Schlansky

2025

Lesson 1: I can find probabilities in two way tables by determining if there is a condition.

1) "and" (two things): $\frac{inside}{total\,total}$

2) one thing: $\frac{outside}{total\,total}$

3) "given that" (two things): $\frac{inside}{condition\,(condition\ is\ written\ last)}$

4) No key words (two things): $\frac{inside}{condition\,(condition\ is\ written\ first)}$

CIRCLE THE CONDITION!!

Lesson 2: I can create two way tables by putting A and not A on each axis.

To create two way tables:
One axis has yes and no for one variable, the other has yes and no for the other variable.
If given probabilities, create the total total is 100 (percents) or 1 (decimals).

Lesson 3: I can determine whether events are independent using
$P(A \cap B) = P(A) \bullet P(B)$

To determine if events are independent:
$P(A \cap B) = P(A) \bullet P(B)$

Type the left hand side in, type the right hand side in, and see if they match up.

Lesson 4:

I can find the probability of "and" and "or" using $P(A \cap B) = P(A) + P(B) - P(A \cup B)$, $P(A \cup B) = P(A) + P(B) - P(A \cap B)$, and $P(A \cap B) = P(A) \bullet P(B)$.

$\cap = and$

$\cup = or$

If not given independent:
$P(A \cap B) = P(A) + P(B) - P(A \cup B)$
$P(A \cup B) = P(A) + P(B) - P(A \cap B)$

If given independent:
$P(A \cap B) = P(A) \bullet P(B)$

Lesson 5: I can find a probability using the normal distribution curve.

Add the values in the bars to find the probability.
A value is expected if it is inside the confidence interval.
Confidence interval = mean ± 2(standard deviation)

Lesson 6: I can find a normally distributed probability using normalcdf and multiplying.

When given normally distributed:
2^{nd} vars: 2:normal cdf
Lower = lower bound
Upper = upper bound
μ = mean
σ = standard deviation

Less than 3:	More than 3:	Between 3 and 6
Lower: -99999999999 Upper 3	Lower: 3 Upper: 9999999999	Lower: 3 Upper: 6

After you input values, hit enter twice.
If asking for probability as a decimal: you are done!
If asking for probability as a percent: multiply by 100
If asking for a quantity, multiply by the total quantity

Lesson 7: I can prepare for my test by practicing!

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Mr. Schlansky Algebra

Two Way Probability Tables

1.	Tacos	Pizza	Total
Male			
Female			
Total			

Find the following probabilities

Male and tacos Male and pizza Female and tacos Female and pizza

Male Female Tacos Pizza

Male given that tacos Female given that pizza

Pizza given that male Tacos given that female

The probability that a female likes pizza The probability a male likes tacos

The probability a pizza fan is a female The probability a taco fan is male

2.	Sports	No Sports	Total
Music			
No Music			
Total			

a) Find the probability that someone plays music given that they play sports.

b) Find the probability that someone does not play music.

c) Find the probability that a musician does not play sports.

d) Find the probability that someone does not play music and does not play sports.

e) Find the probability that someone plays sports.

f) Find the probability that an athlete does not play music.

g) Find the probability that someone plays music given that they do not play sports.

h) If someone plays music, find the probability that they do not play sports.

3. One-hundred employees of a company were asked their opinion on paying high salaries to the CEO. Their responses are summarized in the following contingency table. Express the following probabilities as fractions and rounded to the nearest percent.

	In Favor	Against
Male	15	45
Female	4	36

a) Find the probability that they are male and in favor

b) Find the probability that they are female

c) Find the probability that a male is in favor

d) Find the probability that they are against given that they are female

e) Find the probability that someone is in favor is a male

f) Find the probability that someone is female and against

g) Find the probability that a female is in favor

h) Find the probability that someone is male given that they are in favor

4. A statistics class surveyed some students during one lunch period to obtain opinions about television programming preferences. The results of the survey are summarized in the table below.

Programming Preferences

	Comedy	Drama
Male	70	35
Female	48	42

What is the probability that a student is male and prefers comedy?

What is the probability that a male student would prefer comedy?

What is the probability that a student is male?

What is the probability that a student is female given that they like drama?

5. A public opinion poll was taken to explore the relationship between age and support for a candidate in an election. The results of the poll are summarized in the table below.

Age	For	Against	No Opinion
21–40	30	12	8
41–60	20	40	15
Over 60	25	35	15

What is the probability that someone has no opinion?

What is the probability that someone is over 60 and against?

What is the probability that someone is for the candidate given that they are between 21-40?

6. A survey about television-viewing preferences was given to randomly selected freshmen and seniors at Fairport High School. The results are shown in the table below.

Favorite Type of Program			
	Sports	**Reality Show**	**Comedy Series**
Senior	83	110	67
Freshmen	119	103	54

A student response is selected at random from the results. State the *exact* probability the student response is from a freshman, given the student prefers to watch reality shows on television.

7. At Berkeley Central High School, a survey was conducted to see if students preferred cheeseburgers, pizza, or hot dogs for lunch. The results of this survey are shown in the table below.

	Cheeseburgers	**Pizza**	**Hot Dogs**
Females	32	44	24
Males	36	30	34

Based on this survey, what percent of the students preferred pizza?

1) 30
2) 37
3) 44
4) 74

8. A middle school conducted a survey of students to determine if they spent more of their time playing games or watching videos on their tablets. The results are shown in the table below.

	Playing Games	**Watching Videos**	**Total**
Boys	138	46	184
Girls	54	142	196
Total	192	188	380

Of the students who spent more time playing games on their tablets, approximately what percent were boys?

1) 41
2) 56
3) 72
4) 75

9. A survey was given to 12th-grade students of West High School to determine the location for the senior class trip. The results are shown in the table below.

	Niagara Falls	Darien Lake	New York City
Boys	56	74	103
Girls	71	92	88

To the *nearest percent*, what percent of the boys chose Niagara Falls?

1) 12
2) 24
3) 44
4) 56

10. Jenna took a survey of her senior class to see whether they preferred pizza or burgers. The results are summarized in the table below.

	Pizza	Burgers
Male	23	42
Female	31	26

Of the people who preferred burgers, approximately what percentage were female?

1) 21.3
2) 38.2
3) 45.6
4) 61.9

11. Students were asked to name their favorite sport from a list of basketball, soccer, or tennis. The results are shown in the table below.

	Basketball	Soccer	Tennis
Girls	42	58	20
Boys	84	41	5

What percentage of the students chose soccer as their favorite sport?

1) 39.6%
2) 41.4%
3) 50.4%
4) 58.6%

Name _____ Date _____
Mr. Schlansky Algebra II

Creating/Using Two Way Probability Tables

1. In a class of 30 students, there are 16 girls and there are 12 honors students. If there are 10 honor students that are girls, what is the probability that a student is not an honors student given that they are a girl?

2. There are a total of 160 doctors in a city. There are 75 female doctors and 25 pediatricians. There are 20 female pediatricians. What is the probability that a doctor is a female given that they are a pediatrician? What is the probability that a doctor is a pediatrician given that they are female?

3. The guidance department has reported that of the senior class, 2.3% are members of key club, K, 8.6% are enrolled in AP Physics, P, and 1.9% are in both. Determine the probability of P given K, to the *nearest tenth of a percent*.

4. In a local high school, the probably that a student passes the Algebra II Regents is 82% and the probably that a student passes Chemistry Regents is 74%. If the probably that a student passes neither exam is 18%, find the probability that a student passes the Chemistry Regents and not the Algebra II Regents.

5. Out of 29 students in a Geometry class, 19 came to a 6-hour review class in June. If 20 students passed the Regents and 16 students came to the 6-hour review class and passed the Regents, what is the probability that a student who did not attend the review class passed the Regents? Round your answer to the nearest percent.

6. There are 84 athletes on a Track and Field team. 68 are sprinters and 14 are jumpers. If 10 athletes neither sprint nor jump, what is the probability that a sprinter is a jumper? Round your answer to the nearest tenth of a percent.

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Determining Independence

1. The results of a poll of 200 students are shown in the table below:

	Preferred Music Style		
	Techno	**Rap**	**Country**
Female	54	25	27
Male	36	40	18

For this group of students, do these data suggest that gender and preferred music styles are independent of each other? Justify your answer.

2. At a local mall, 125 people were asked how they choose to pay for their merchandise. The data is shown in the table below:

	Credit Card	Cash
Male	40	10
Female	60	15

Does the data suggest that the gender and type of payment are independent of each other? Explain your answer.

3. One-hundred employees of a company were asked their opinion on paying high salaries to the CEO. Their responses are summarized in the following contingency table.

	In Favor	Against
Male	15	45
Female	4	36

Based on the data, are gender an opinion on salaries independent of each other? Justify your answer.

4. Juan and Filipe practice at the driving range before playing golf. The number of wins and corresponding practice times for each player are shown in the table below.

	Juan Wins	**Felipe Wins**
Short Practice Time	8	10
Long Practice Time	15	12

Given that the practice time was long, determine the exact probability that Filipe wins the next match. Determine whether or not the two events "Filipe wins" and "long practice time" are independent. Justify your answer.

5. The results of a survey of the student body at Central High School about television viewing preferences are shown below.

	Comedy Series	Drama Series	Reality Series	Total
Males	95	65	70	230
Females	80	70	110	260
Total	175	135	180	490

Are the events "student is a male" and "student prefers reality series" independent of each other? Justify your answer.

6. The following table represents the food preferences of students in a high school. Are the events "a student prefers chicken nuggets" and "a student is in 10th grade" independent of each other? Justify your answer.

	Pizza	Chicken Nuggets	Cheeseburger
9th	112	87	93
10th	140	52	43
11th	100	82	71
12th	119	102	72

7. The relative frequency table shows the proportion of a population who have a given eye color and the proportion of the same population who wear glasses. Given the data, are the events of having blue eyes and wearing glasses independent? Justify your answer.

	Wear Glasses	**Don't Wear Glasses**
Blue Eyes	0.14	0.26
Brown Eyes	0.11	0.24
Green Eyes	0.10	0.15

8. A study was done at West Apple High School analyzing the student lateness and Regents Exam results. It was found that 32% of the students arrive to school late and 72% pass their Regents Exams. 14% of the students arrive late and pass their Regents Exams. Are the events "student is late" and "student passes Regents Exams" independent of each other? Justify your answer.

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Probability of Conjunctions and Disjunctions

1. $P(A) = .27$, $P(B) = .36$ and $P(A \cap B) = .11$. Find $P(A \cup B)$.

2. $P(A) = .78$, $P(B) = .49$, and $P(A \cap B) = .31$. Find $P(A \cup B)$.

3. $P(A) = .61$, $P(B) = .42$, and $P(A \cup B) = .79$. Find $P(A \cap B)$.

4. $P(A) = .19$, $P(B) = .29$, and $P(A \cup B) = .36$. Find $P(A \cap B)$.

5. $P(A) = .25$, $P(B) = .12$, and events A and B are independent. Find $P(A \cap B)$.

6. $P(A) = .72$, $P(B) = .6$, and events A and B are independent. Find $P(A \cap B)$.

7. $P(A) = .4$, $P(A \cap B) = .25$, and events A and B are independent. Find $P(B)$.

8. $P(B) = .65$, $P(A \cap B) = .31$, and events A and B are independent. Find $P(A)$.

9. The probability of event A is 87%. The probability of event B is 70%. The probability of both events happened in 60%. What is the probability of event A or event B happens?

10. The probability of event A happening is 14% and the probability of event B happening is 18%, The probability that event A or event B happens is 20%. What is the probability that event A and event B happens?

11. Events A and B are independent of each other. If the probability of event A happening is 10% and the probability of event B happening is 28%, what is the probability of event A and event B happening?

12. Events A and B are independent of each other. If the probability of event A happening is 52% and the probability of event A and B happening is 23%, what is the probability of event B happening?

13. The probability that a student in Jacqua High School is in band is $\frac{127}{466}$ and the probability that a student is on the track team is $\frac{82}{466}$. If the probability that they are on the track team and in band is $\frac{74}{466}$, what is the probability that they are on the track team or in band?

14. The probability that a person files their tax return in March is $\frac{127}{165}$. The probability that a person watches College Basketball in March is $\frac{98}{123}$. If the probability that a person watches College Basketball and files their tax return in March is $\frac{62}{95}$, what is the probability that a person watches College Basketball or files their tax return? Round your answer to the nearest percent.

15. On a given school day, the probability that Nick oversleeps is 48% and the probability he has a pop quiz is 25%. Assuming these two events are independent, what is the probability that Nick oversleeps and has a pop quiz on the same day?

1) 73%
2) 36%
3) 23%
4) 12%

16. In 2015 at Sabres Prep Academy, the probability that a student passed Algebra II was 78%. The probability that a student passed Chemistry was 86%. The probability they passed Algebra II or Chemistry was 88%. What is the probability that they passed Algebra II and Chemistry?

17. The probability that Chloe the cardinal shows up in the Schlansky's backyard is $\frac{12}{19}$. The probability that Chloe shows up in the Silverman's backyard is $\frac{10}{17}$. If the probability that Chloe shows up in the Schlansky's backyard or the Silverman's backyard is $\frac{12}{16}$, what is the probability that Chloe shows up in both backyards?

18. There are 24 students in a math class. 15 of them play a sport and 20 of them play an instrument. 22 play a sport or play an instrument. What is the probability that a student chosen at random will play a sport and play an instrument?

19. Over the past 30 nights, Baxter barked 8 nights and cried 15 nights. He barked or cried 11 nights. How many nights did he bark and cry?

20. Suppose events A and B are independent and $P(A \text{ and } B)$ is 0.2. Which statement could be true?

1) $P(A) = 0.4, P(B) = 0.3, P(A \text{ or } B) = 0.5$
2) $P(A) = 0.8, P(B) = 0.25$
3) $P(A|B) = 0.2, P(B) = 0.2$
4) $P(A) = 0.15, P(B) = 0.05$

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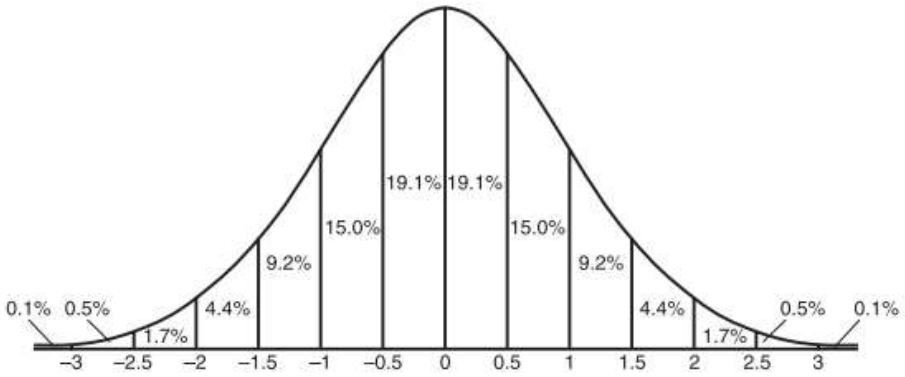
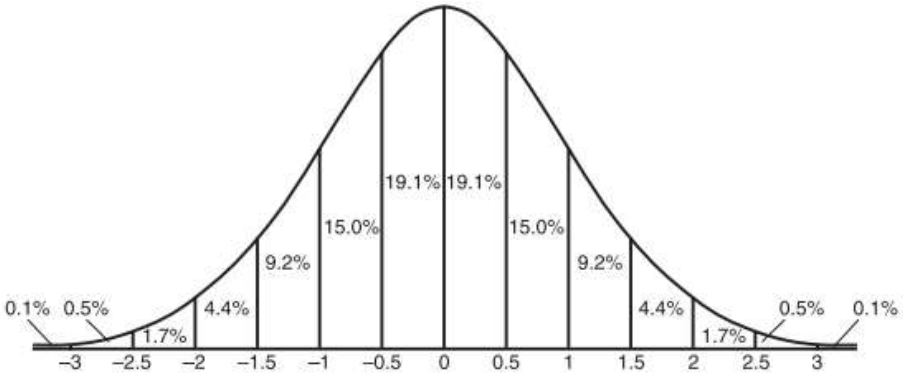
Normal Distribution Curve

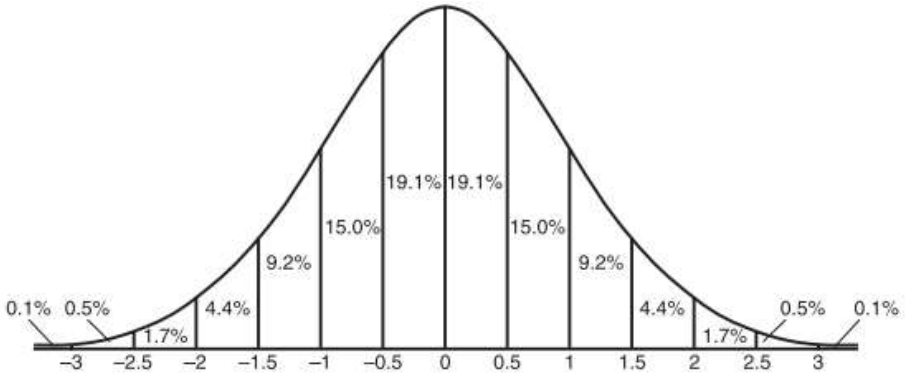
1. On a standardized test, the results are normally distributed, the mean is 78 and the standard deviation is 4. What is the confidence interval? Is a score of 71 plausible? Is a score of 98 plausible? What is the probability that a randomly selected score is between 76 and 82?



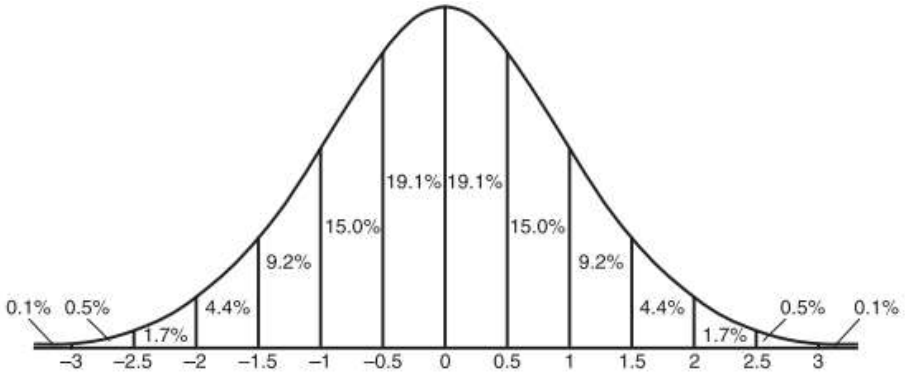
2. On a test that has a normal distribution of scores, 82 is the mean and the standard deviation is 2. What is the confidence interval? Is a score of 97 plausible? Is a score of 81 plausible? What is the probability that a randomly selected score will be between 78 and 84?



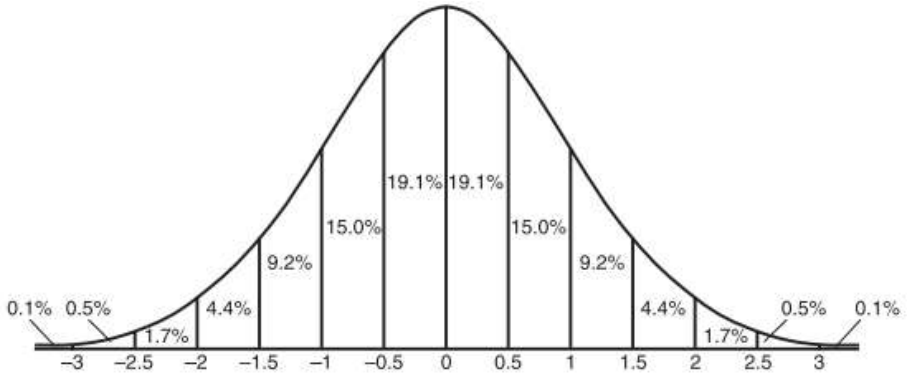
3. If the amount of time students work in any given week is normally distributed with a mean of 10 hours per week and a standard deviation of 2 hours, what is the confidence interval? Is a time of 13.5 hours plausible? Is a time of 18.1 hours plausible? What is the probability that a randomly selected student will work between 8 and 12 hours?



4. The lengths of 100 pipes have a normal distribution with a mean of 102.4 inches and a standard deviation of 0.2 inch. What is the range of pipe length that should be expected? Is a pipe length of 101 inches plausible? Is a pipe length of 97 inches plausible? What is the probability that a randomly selected pipe will be between 102 inches and 103 inches?



5. The amount of time students practice their instrument is normally distributed with a mean of 42 minutes and a standard deviation of 7 minutes. What is the confidence interval for the amount of time that students practice their instrument? Is a time of 30 minutes plausible? Is a time of 76 minutes plausible? What is the probability that a randomly selected student practice between 35 and 56 minutes?



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Normal Distribution Without the Curve

1. The weights of bags of Graseck's Chocolate Candies are normally distributed with a mean of 4.3 ounces and a standard deviation of 0.05 ounces. What is the probability that a bag of these chocolate candies weighs less than 4.27 ounces?

1) 0.2257
2) 0.2743
3) 0.7257
4) 0.7757

2. The weight of a bag of pears at the local market averages 8 pounds with a standard deviation of 0.5 pound. The weights of all the bags of pears at the market closely follow a normal distribution. Determine what percentage of bags, to the *nearest integer*, weighed *more* than 8.25 pounds.

3. The scores of a recent test taken by 1200 students had an approximately normal distribution with a mean of 225 and a standard deviation of 18. Determine the number of students who scored between 200 and 245.

4. The heights of women in the United States are normally distributed with a mean of 64 inches and a standard deviation of 2.75 inches. The percent of women whose heights are between 64 and 69.5 inches, to the *nearest whole percent*, is

1) 6
2) 48
3) 68
4) 95

5. The weights of students on the boys cross country team is normally distributed with a mean of 135.3 pounds and a standard deviation of 2.8 pounds. If the team has 32 members, how many of them, rounded to the *nearest person,* would be expected to weigh less than 132 pounds?

6. The lifespan of a 60-watt lightbulb produced by a company is normally distributed with a mean of 1450 hours and a standard deviation of 8.5 hours. If a 60-watt lightbulb produced by this company is selected at random, what is the probability that its lifespan will be between 1440 and 1465 hours?

1) 0.3803
2) 0.4612
3) 0.8415
4) 0.9612

7. The number of hours students spent studying for their Regents exam is normally distributed with a mean of 14 hours and a standard deviation of 3.2 hours. If a student is randomly selected, what is the probability that a student spent more than 22 hours studying? Round your answer to the nearest tenth of a percent.

8. The scores on a math test are normally distributed with a mean of 76.2 and a standard deviation of 4.7. If 248 students took the exam, approximately how many students got between a 70 and an 80?

9. The number of hours of sleep employees at a company get per night is normally distributed with a mean of 7.1 hours and a standard deviation of 1.4 hours. If there are 2500 employees at the company, approximately how many of them, to the nearest person, got less than 5 hours of sleep?

10. The scores on a mathematics college-entry exam are normally distributed with a mean of 68 and standard deviation 7.2. Students scoring higher than one standard deviation above the mean will not be enrolled in the mathematics tutoring program. How many of the 750 incoming students can be expected to be enrolled in the tutoring program?

1) 631
2) 512
3) 238
4) 119

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Probability Review Sheet

1. The probability that Chloe the cardinal shows up in the Schlansky's backyard is $\frac{12}{19}$. The probability that Chloe shows up in the Silverman's backyard is $\frac{10}{17}$. If the probability that Chloe shows up in the Schlansky's backyard or the Silverman's backyard is $\frac{12}{16}$, what is the probability that Chloe shows up in both backyards?

2. The probability that a student in Mr. Orkofsky's first period class passes the Regents is $\frac{25}{26}$ and the probability that a student in his period 8 class passes the Regents is $\frac{17}{19}$. If the probability that a student in period 1 or period 8 passing the Regents is $\frac{27}{28}$, what is the probability that a student passes the regents in period 1 and period 8? Round your answer to the nearest percent.

3. On a given school day, the probability that Nick oversleeps is 48% and the probability he has a pop quiz is 25%. Assuming these two events are independent, what is the probability that Nick oversleeps and has a pop quiz on the same day?

4. The probability that a student in Jacqua High School is in band is $\frac{127}{466}$ and the probability that a student is on the track team is $\frac{82}{466}$. If the probability that they are on the track team and in band is $\frac{74}{466}$, what is the probability that they are on the track team or in band?

5. At the Lakeside Resort, the probability that a guest room has a view of the lake is 0.24. The probability that a guest room has a queen-size bed is 0.74. Let *A* be the event that the guest room has a view of the lake, and let *B* be the event that the guest room has a queen-size bed. Events *A* and *B* are found to be independent of each other. Determine the exact probability that a randomly selected guest room has a view of the lake and a queen-size bed.

6. The probability that a person files their tax return in March is $\frac{127}{165}$. The probability that a person watches College Basketball in March is $\frac{98}{123}$. If the probability that a person watches College Basketball or files their tax return in March is $\frac{89}{95}$, what is the probability that a person watches College Basketball and files their tax return? Round your answer to the nearest percent.

7. The set of data in the table below shows the results of a survey on the number of messages that people of different ages text on their cell phones each month. If a person from this survey is selected at random, what is the probability that:

Age Group	Text Messages per Month		
	0–10	11–50	Over 50
15–18	4	37	68
19–22	6	25	87
23–60	25	47	157

a) the person texts over 50 messages per month given that the person is between the ages of 23 and 60?

b) the person is 15-18 and texts 11-50 messages per month?

c) the person texts 0-10 messages per month?

8. A statistics class surveyed some students during one lunch period to obtain opinions about television programming preferences. The results of the survey are summarized in the table below.

Programming Preferences

	Comedy	Drama
Male	70	35
Female	48	42

a) What percentage of the school's male students would prefer comedy?

b) What percentage of the schools students are female and prefer drama?

c) What percent of the school's students prefer comedy?

9. In a class of 30 students, there are 16 girls and there are 12 honors students. If there are 10 honor students that are girls, what is the probability that a student is not an honors student given that they are a girl?

10. In a local high school, the probably that a student passes the Algebra II Regents is 82% and the probably that a student passes Chemistry Regents is 74%. If the probably that a student passes neither exam is 18%, find the probability that a student passes the Chemistry Regents only.

11. At a local mall, 125 people were asked how they choose to pay for their merchandise. The data is shown in the table below:

	Credit Card	Cash
Male	40	10
Female	60	15

What is the probability that a female uses cash? Does the data suggest that the gender and type of payment are independent of each other? Explain your answer.

12. One-hundred employees of a company were asked their opinion on paying high salaries to the CEO. Their responses are summarized in the following contingency table. What is the probability that someone is male given that they are against? Based on the data, are gender an opinion on salaries independent of each other? Justify your answer.

	In Favor	Against
Male	15	45
Female	4	36

13. The lifespan of a 60-watt lightbulb produced by a company is normally distributed with a mean of 1450 hours and a standard deviation of 8.5 hours. If a 60-watt lightbulb produced by this company is selected at random, what is the probability that its lifespan will be between 1440 and 1465 hours?

1) 0.3803
2) 0.4612
3) 0.8415
4) 0.9612

14. The number of hours students spent studying for their Regents exam is normally distributed with a mean of 14 hours and a standard deviation of 3.2 hours. If a student is randomly selected, what is the probability that a student spent more than 22 hours studying? Round your answer to the nearest tenth of a percent.

15. The scores on a math test are normally distributed with a mean of 76.2 and a standard deviation of 4.7. If 248 students took the exam, to the *nearest student*, how many scored less than a 70?

16. What is the completely factored form of $k^4 - 4k^2 + 8k^3 - 32k + 12k^2 - 48$?

1) $(k^2 - 4)(k^2 + 7k + 12)$
2) $(k^2 - 4)(k^2 + 8k + 12)$
3) $(k + 2)(k - 2)(k + 3)(k + 4)$
4) $(k + 2)(k - 2)(k + 6)(k + 2)$

17. The completely factored form of $n^4 - 9n^2 + 4n^3 - 36n - 12n^2 + 108$ is

1) $(n^2 - 9)(n + 6)(n - 2)$
2) $(n + 3)(n - 3)(n + 6)(n - 2)$
3) $(n - 3)(n - 3)(n + 6)(n - 2)$
4) $(n + 3)(n - 3)(n - 6)(n + 2)$

18. For $x > 0$, which expression is equivalent to $\dfrac{\sqrt[3]{x^2} \bullet \sqrt{x^5}}{\sqrt[6]{x}}$?

1) x
2) $x^{\frac{3}{2}}$
3) x^3
4) x^{10}

19. Given $y > 0$, the expression $\sqrt{3x^2y} \bullet \sqrt[3]{27x^3y^2}$ is equivalent to

1) $81x^5y^3$
2) $3^{1.5}x^2y$
3) $3^{\frac{5}{2}}x^2y^{\frac{5}{3}}$
4) $3^{\frac{3}{2}}x^2y^{\frac{7}{6}}$

20. Dee is planning on decreasing the amount of time she eats fast food per month. During the first month, she ate fast food 42 times. Each month, she eats at fast food restaurants 10% less than the previous month. How many total times does she eat fast food in the first 4 months rounded to the *nearest integer*?

21. Kina earns a $27,000 salary for the first year of work at her job. She earns annual increases of 2.5%. What is the total amount, to the *nearest cent*, that Kina will earn for the first eight years at this job?

22. The depth of the water at a marker 20 feet from the shore in a bay is depicted in the graph below.

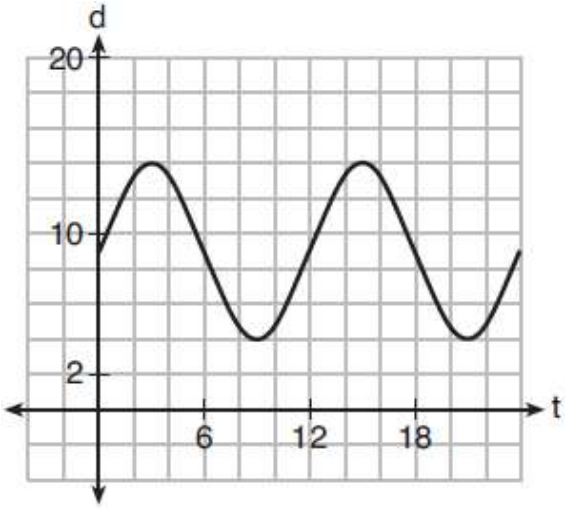
If the depth, *d*, is measured in feet and time, *t*, is measured in hours since midnight, what is an equation for the depth of the water at the marker?

1) $d = 5\cos\left(\frac{\pi}{6}t\right)+9$

2) $d = 5\cos\left(\frac{\pi}{9}t\right)+9$

3) $d = 5\sin\left(\frac{\pi}{6}t\right)+9$

4) $d = 5\sin\left(\frac{\pi}{9}t\right)+9$



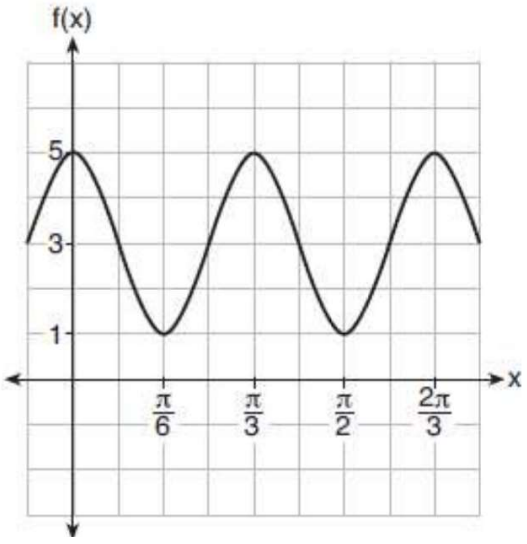
23. Which equation would represent the given graph?

1) $y = 2\cos(3x)+3$

2) $y = 2\cos(6x)+3$

3) $y = -2\sin(3x)+3$

3) $y = -2\sin(6x)+3$



24. Which value, to the *nearest tenth*, is a solution of $f(x) = g(x)$ if $f(x) = 4\sin 2(x-4)+3$ and $g(x) = 4\ln(x)+3$?

1) 0.5
2) 2.03
3) (2.03,5.84)
4) (0.5, 0.8)

25. Which value, to the *nearest tenth*, is the *smallest* solution of $f(x) = g(x)$ if $f(x) = 3\sin\left(\frac{1}{2}x\right) - 1$ and $g(x) = x^3 - 2x + 1$?

1) -3.6
2) -2.1
3) -1.8
4) 1.4

26. Find, to the *nearest hundredth*, the average rate of change of $f(x) = -3\cos(2x) + 1$ over the interval $-1 \le x \le 4$.

27. The average monthly high temperature in Buffalo, in degrees Fahrenheit, can be modeled by the function $B(t) = 25.29\sin(0.4895t - 1.9752) + 55.2877$, where t is the month number (January = 1). State, to the *nearest tenth*, the average monthly rate of temperature change between August and November.