Trigonometry

	Day	Date	Video	Assignment	Is it done?
12	Tuesday	3/31/2020	8.1-2	237	
13	Wednesday	4/1/2020	8.3	238	
14	Thursday	4/2/2020	8.4	239	
15	Friday	4/3/2020		243	
17	Tuesday	4/5/2020		practice quiz, 8.1-4	
18	Wednesday	4/6/2020		take quiz or do quiz as an extra review day	
	Tuesday	4/14/2020		uncertain, based on 4/6 decision	
	How many total did you do:				

TRIG

70
8.3

237:1-13, 238:1-2

___ BOYS, ___ GIRLS IN TRIG

WAYS I COULD PICK A BOY OR A GIRL

WAYS I COULD PICK A BOY AND A GIRL

AND → X

OR → +

MAKE UP ATTITUDE STORY

USING "EMILY KUST"

VOWEL OR CONSONANT

V AND C

C AND ANOTHER C

2 LETTER "WORD"

3

9

USE TRIG STUDENTS TO MAKE KICKBALL TEAM

PICK PITCHER

THEN PICK 1B

PICK P AND 1B

NOW PICK 2B

PICK P AND 1B AND 2B

POSITION 5 PLAYERS

POSITION EVERYBODY IN CLASS

239:1-17

239: 1-17

PERMUTATIONS

ARRANGEMENTS IN ORDER

USING 3 LETTERS, MAKE 3 LETTER "WORDS"

abc acb bac bca cab cba

$3 \times 2 \times 1 = 3! = 6$

USING 10 LETTERS, MAKE 10 LETTER "WORDS"

$10 \times 9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 10!$

$= 3,628,800$

USING 10 LETTERS, MAKE 4 LETTER "WORDS"

$10 \times 9 \times 8 \times 7 = 5040$

ARRANGE 3 of 7 BOOKS ON A SHELF

$7 \times 6 \times 5 = 210$

POSITION 5 of 12 BASKETBALL PLAYERS

$12 \times 11 \times 10 \times 9 \times 8 = 95,040$

MAKE A 7 LETTER "WORD" FROM THE LETTERS IN "SEQUOIA", PROBABILITY of Q AS 1ST LETTER, VOWEL LAST?

$\frac{1 \times 5 \times 5!}{7!} = \frac{5}{7 \times 6} = \frac{5}{42}$

243: 1-22

Name _____ Trig Practice Quiz, 8.1-4

A pair of dice is rolled, one black and one white. Find the **probability** of

1. The total is 6. _____
2. The total is at least 8. _____
3. The total is more than 7. _____
4. The numbers are 3 and 5. _____
5. The white is 5 or the black is 3. _____
6. The white is 6 and the black is 2. _____
7. The total is between 3 and 8. _____
8. The total is between 4 and 7 inclusive. _____
9. The total is 14. _____

A card is drawn at random from a deck of 52.

10. What name is given to the act of drawing a card? _____
11. How many outcomes are in the sample space? _____
12. What is the **probability** that the card is a 4? _____
13. What is the **probability** that the card is a face card (jack, queen, or king)? _____
14. What is the **probability** that the card is a spade? _____
15. What is the **probability** that the card is an odd number card? _____
16. What is the **probability** that the card is the 5 of clubs? _____
17. What is the **probability** that the card is a joker? _____
18. What is the **probability** that the card is red? _____

I have 9 trig students and 2 calculus students.

19. How many ways could I select a trig or a calculus student? _____
20. How many ways could I select a trig and a calculus student? _____

Using the letters of the word WesRoach,

21. How many ways could you pick a vowel and a consonant? _____
22. How many ways could you pick a vowel or a consonant? _____

23. How many ways could you pick a vowel and another vowel? _____

24. How many 3 letter "words" could you make? _____

25. How many 6 letter "words" could you make? _____

26. How many 8 letter "words" could you make? _____

27. A group has 143 boys and 56 left-handed people. 24 are both. How many are boys or left-handed? _____

Select a permutation at random from the letters in Bodack

28. What is the **probability** it begins with a consonant? _____

29. What is the **probability** that the second letter is o and the third is d? _____

30. What is the **probability** that the last two letters are vowels? _____

You have 8 books to put on a shelf. How many ways could you do it if you had to

31. use all 8 books? _____

32. use any 4 books? _____

You have 10 people on a baseball team.

33. How many ways could you place 9 people in positions? _____

34. What is the **probability** that Nikki is the pitcher? _____

35. What is the **probability** that Nikki, Jessica, or Qsol is the pitcher; and Greg or Chooch is the catcher? _____

The ten digits 0 to 9 are arranged in order with no repeats.

36. What is the **probability** that the number is greater than 6 billion? _____

37. What is the **probability** that the number starts with a 3, has an even number in the 6th place, and an odd number in the 7th place? _____

How many ways could you make a 6 character license plate (allowing repeat characters) if

38. Each of the 6 characters were letters? _____

39. Each of the 6 characters were digits? _____

40. The first 4 characters were letters and the last 2 were digits? _____

41. Each of the 6 could be a letter or a digit, in any order? _____

EC. How many 4 letter "words" can you make out of the letters in "Trigonometry"? _____

12

Name _____ Trig Quiz, 8.1-4

A pair of dice is rolled, one black and one white. Find the **probability** of

1. The total is 4. _____
2. The total is at least 9. _____
3. The numbers are 6 and 5. _____
4. The white is 3 or the black is 1. _____
5. The white is 5 and the black is 3. _____
6. The total is between 3 and 6 inclusive. _____
7. The total is 14. _____

A card is drawn at random from a deck of 52.

8. What name is given to the act of drawing a card? _____
9. How many outcomes are in the sample space? _____
10. What is the **probability** that the card is a 7? _____
11. What is the **probability** that the card is an odd number card? _____
12. What is the **probability** that the card is the 3 of spades? _____
13. What is the **probability** that the card is a club? _____

I have 9 trig students and 2 calculus students.

14. How many ways could I select a trig or a calculus student? _____
15. How many ways could I select a trig and a calculus student? _____

Using the letters of the word Blythe,

16. How many ways could you pick a vowel and a consonant? _____

17. How many ways could you pick a vowel or a consonant? _____

18. How many ways could you pick a consonant and another consonant? _____

19. How many 3 letter "words" could you make? _____

20. How many 6 letter "words" could you make? _____

21. A group has 200 boys and 50 left-handed people. 20 are both. How many are boys or left-handed? _____

Select a permutation at random from the letters in Lauren

22. What is the **probability** it begins with a consonant? _____

23. What is the **probability** that the second letter is r and the third is l? _____

24. What is the **probability** that the last two letters are vowels? _____

You have 10 books to put on a shelf. How many ways could you do it if you had to

25. use all 10 books? _____

26. use any 4 books? _____

You have 12 people on a baseball team to put into 9 positions.

27. What is the **probability** that Nikki is the pitcher? _____

28. What is the **probability** that Nikki, Jessica, or Qsol is the pitcher; and Greg or Chooch is the catcher? _____

The ten digits 0 to 9 are arranged in order with no repeats.

29. What is the **probability** that the number is greater than 6 billion? _____

30. What is the **probability** that the number starts with a 3, has an even number in the 6th place, and an odd number in the 7th place? _____

EC. How many 4 letter "words" can you make out of the letters in "Heather"? _____

TRIG

8.5

COMBINATIONS

ORDER DOESN'T MATTER (SMALLER #'S)

PERMUTATIONS

ORDER DOES MATTER (LARGER #'S)

FACTORIAL

PERMUTATION WHERE ALL ITEMS ARE USED

PICK A TEAM	C
SEATING CHART	P
WORDS	P
PICK A COMMITTEE	C
HAND OF CARDS	C
POSITION TEAM	
~~STACK CARDS~~	P
SHELF BOOKS	P

ex 4

DEAL CARDS

25e: 9-12, 17-36

TRIG

8.6

250: 9-12, 17-36

P(A AND THEN B) = P(A) · P(B) (INDEPENDENT EVENTS)

P(A OR B) = P(A) + P(B)

P(NOT A) = 1 − P(A)

P(AT LEAST 1) = 1 − P(NONE)

ex, P 253

[redacted]

254: 1-16

Name _____ **Trig Practice Quiz, 8.5-6**

1. ${}_{12}C_0$ _____

2. ${}_{12}C_{12}$ _____

3. ${}_{12}C_8$ _____

4. How many ways can you select and position a team of 7 from a group of 15? _____

5. How many ways could you be dealt an eight card hand from a deck of cards? _____

6. If you go to Baskin Robbins (who has 31 flavors), how many different double scoop cones could you get? _____

7. How many ways could I choose to take 6 Jolly Ranchers from a bag of 14? _____

8. How many 8 letter "words" could I make from the alphabet? _____

9. How many ways could I shelf 7 books out of a pile of 9 books? _____

10. How many ways could I select order all 25 problems on a test? _____

11. What is the **probability** of being dealt 15 cards and getting 2 diamonds, 3 spades, and 4 hearts? _____

12. What is the **probability** of being dealt 9 cards and having 5 of them be spades? _____

13. What is the **probability** of selecting a committee of 7 (5 boys, 2 girls) from a group of 14 (9 boys, 5 girls)? _____

The probability of Steve Patterson coming late is .7. The probability of him leaving early is .8.

14. What is the probability he does not come late? _____

15. That he does not leave early? _____

16. That he does both? _____

17. That he does neither? _____

18. That he does at least one? _____

At any given basketball game, the probability of the JV winning is .2, the girls .5, and the boys .9. What is the probability of winning

19. All three?

_____

20. Exactly two of the three?

_____

21. Exactly one of the three?

_____

22. None of the three?

_____

23. At least one of the three?

_____

24. If your chance of getting one trig question right is .95, what is your probability of getting 25 right in a row?

_____

25. If you wanted to have a 50% probability of getting 25 right in a row, what would your probability need to be on any one particular question?

_____

EC1. When you have one illness, it can make you more or less likely to get another illness. Suppose your chance of getting a virus is .3 and your chance of getting an infection is .5. If your probability of getting the virus and then the infection is .06, what is the probability of getting the infection once you have had the virus?

_____

EC2. If your probability of getting the infection and then the virus is .47, what is your probability of getting the virus once you have had the infection?

_____

TRIG

8.7
78

P(SUCCESS) = .4 P(FAILURE) = .6

P(0 SUCCESSES OUT OF 5) = $_5C_0 (.6)^5 (.4)^0$ (.07776)

(1 OUT OF 5) = $_5C_1 (.6)^4 (.4)^1$ (.2592)

2 $_5C_2 (.6)^3 (.4)^2$ (.3456)

3 $_5C_3 (.6)^2 (.4)^3$ (.2304)

4 $_5C_4 (.6)^1 (.4)^4$ (.0768)

5 $_5C_5 (.6)^0 (.4)^5$ (.01024)

CHECK IF 1
THEN ADD TO 1

258: 1-12
PICK 1 OR 2

TRIG

8.8
79

258: 1-12

EXPECTATION

Σ PROBABILITY × PAYOFF

263, ex: $P(0) = {}_3C_0 (.3)^0(.7)^3 = .343 \times -50$
$P(1) = {}_3C_1 (.3)^1(.7)^2 = .441 \times -45$
$P(2) = {}_3C_2 (.3)^2(.7)^1 = .189 \times 10$
$P(3) = {}_3C_3 (.3)^3(.7)^0 = .027 \times 200$

-29.705
(LOSE 30¢ / GAME)

PICK A CARD. PAY $1. GET $10 FOR ACE

$P(\text{ACE}) = 1/13 \times 9$
$P(\text{NOT}) = 12/13 \times -1$
$-\$.23$

264: 1-8

264: 9-15

Name _____ **Trig Practice Quiz, 8.7-8**

1. The probability that Lauren is intimidated by a teacher is .2. During her day, she has 4 teachers. Find the probability she is intimidated by none of these teachers

_____

2. exactly one

_____

3. exactly two

_____

4. exactly three

_____

5. exactly four

_____

6. How do you know your answers are reasonable?

_____

7. She will drop out of school is she is intimidated by at least two of her teachers. What is that probability? _____

8. The probability of Jessica wearing a piece of furry clothing is .1. In a period of three days, what is the probability that she wears furry clothing none of the days?

_____

9. exactly one time?

_____

10. exactly two times?

_____

11. exactly three times?

_____

12. The probability of Sarah getting a trig question right is .9. On a 30 question test, what would be the probability that she gets exactly 20 right?

_____

13. exactly 23 right?

_____

14. exactly 27 right?

_____

15. all 30 right?

_____

16. If he wants a 20% probability of getting all 30 right, what must be her probability to get any one question right (instead of the .9 from before)?

_____

17. The probability of a seed sprouting is .8. If you plant 70 seeds, what is the expected number of sprouts? _____

18. At a softball game, the probability that Jessica makes an out is .2, the probability of a single is .4, the probability of a double is .25, the probability of a triple is .05, and the probability of a home run is .1. What is her expectation is her payoff is 0 for an out, 1 for a single, 2 for a double, 3 for a triple, 4 for a home run?

_____

19-20. At the prom, they have small pieces of cheese and small pieces of butter that are difficult to tell apart because they are similar in size, shape, and color (but not taste). A mischievous student named Scott replaces 19 of 200 pieces of cheese with pieces of butter. Knowing this, a smart trig student named Nate makes a bet with a dumb calculus student named Shane. Shane pays Nate $1.50 to play this little game. If Shane can pick a piece of butter, he gets $10. What is Nate's expectation?

_____

21-2. You pay a dollar to play a game where you draw one card from the deck. You get 5 cents if you get a red card, 20 cents for an odd number card, and five dollars for the two of hearts. What is your expectation?

_____

23-4. The probability of Wes getting A's in Trig, Chemistry, and Bible are .8, .7, and .9, respectively. If he gets $50 from his mom for getting all A's, what is his expectation?

_____

25-6. You pay 7 cents to play a game. A phone number (excluding area code) is selected at random. You win ten dollars if all 7 digits in the number are different. What is your expectation?

_____

27-30. A group of 8000 15 year-olds from an insurance company. They pay $5 in premiums per year. The death benefit is $800. The table below shows the probability that a person a certain age dies before they reach the next year:
15: .00142 16: .00149 17: .00158 18: .00169 19: .00192 20: .00208
Complete this table and also compute the total profit.

	people who start the year	deaths	income	money paid out	profit
15					
16					
17					
18					
19					
20					

Name _____ **Trig Test, Chapter 8**

A pair of dice is rolled, one black and one white. Find the probability of

1. The total is at least 4. _____
2. The white is 6 and the black is 3. _____
3. The total is 6. _____
4. The numbers are 5 and 6. _____
5. The total is less than 8. _____
6. The white is 3 or the black is 2. _____
7. The total is between 6 and 9. _____

A card is drawn at random from a deck of 52.

8. What is the probability that the card is a joker? _____
9. What is the probability that the card is a heart? _____
10. What is the probability that the card is an even number card? _____
11. What is the probability that the card is a jack or queen? _____
12. What is the probability that the card is a red two? _____
13. How many outcomes are in the sample space? _____
14. What name is given to the act of drawing a card? _____

If I have 7 trig students and 4 calculus students

15. How many ways could I select a trig and a calculus student? _____
16. How many ways could I select a trig or a calculus student? _____

Using the letters of the word Ritenbaugh,

17. How many ways could you pick a vowel or a consonant? _____
18. How many ways could you pick a vowel and a consonant? _____

19. There are 14 people in trig and 15 in compsci. If there are 8 people in both, how many different people have trig or compsci? _____

Select a permutation at random from the word Grabowski

20. What is the probability it begins with a vowel? _____

21. What is the probability that the second letter is r and the third is a consonant? _____

22. What is the probability that the last two letters are vowels? _____

23. Still using Grabowski, what is the probability that it starts with r, has a consonant last, and a vowel in the third space?

_____

24. Still using Grabowski, how many five letter words could you make?

25. Using the alphabet, how many 9 letter words could you make? _____

26. How many ways could you order 12 questions on a test? _____

27. How many 13 card bridge hands could you make? _____

28. If there are 31 flavors of ice cream at Baskin Robbins, how many different bowls of ice cream could you get using six different flavors?

_____

29. How many ways can you select a team of 4 from a group of 9? _____

30. How many ways could you be dealt a five card poker hand? _____

31. What is the probability of selecting a committee of 8 (5 boys, 3 girls) from a group of 18 (10 boys, 8 girls)?

_____

32. What is the probability of being dealt 13 cards and having 7 of them be spades?

_____

33. What is the probability of being dealt 13 cards and getting 5 diamonds, 4 spades, and 2 hearts?

_____

The probability of Emily missing a trig question is .02. The probability of her missing a geometry question is .01.

34. What is the probability she gets a geometry question right? _____

35. That she gets a trig question right? _____

36. That she gets both wrong? _____

37. That she gets both right? _____

38. That she gets at least one right? _____

39. What is her chance of getting a perfect on a 55 question trig test? _____

40. If she wanted to have a 75% chance of getting a perfect, what would her probability of getting a question right be?

_____

The probability that Ian makes a foul shot is .85. In a game he shoots 5 foul shots. Find the probability he makes

41. none

42. one

43. two

44. three

45. four

46. five

47. How do you know your answers are reasonable?

48. You pay a dollar to play a game. You win $8 if an ace is chosen, and get nothing otherwise. What is your mathematical expectation?

49. Calvin Butterball has a gambling addiction. He makes bets with people about phone numbers. He picks a page out of the phone book at random and looks at the first number on the page. If all ten digits of the phone number (including the area code) are different, Calvin gets $10, but if they are not, he loses 5¢. What is Calvin's expectation?

50. At the prom, a mischievous student named Scott replaces 7 of 200 pieces of cheese with pieces of butter. Knowing this, a smart trig student named Nate makes a bet with a dumb calculus student named Shane. Shane pays Nate $1 to play this little game. If he can pick a piece of butter, he gets $5. What is Nate's expectation?

51. If Kara's probability of an A in trig is .85 in physics is .9, and in British literature is .8, what is her expectation if her father pays her $30 for all A's?

52. What is her expectation if she is paid $10 for each A?

53. At a softball game, the probability that Marcy makes an out is .35, the probability of a single is .3, the probability of a double is .2, the probability of a triple is .05, and the probability of a home run is .1. What is her expectation is her payoff is 0 for an out, 1 for a single, 2 for a double, etc.?

54. It costs you $20 to play a hand of bridge (13 cards). If you are dealt all spades, you win $10,000. What is your expectation?

55. The probability of a seed sprouting is .8. If you plant twenty seeds, what is the mathematically expected number of seeds that will sprout?