Current Score : 35 / 35

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1. 1.16/1.16 points | Previous AnswersBBUnderStat12 4.1.002.

Suppose the newspaper states that the probability of rain today is 65%.

What is the complement of the event "rain today"?

- ○ rain yesterday
- ○ rain tomorrow
- ⦿ no rain today
- ○ no rain tomorrow

✔

What is the probability of the complement? (Enter your answer to two decimal places.)

.35 ✔

Need Help? [Read It]

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2. 1.16/1.16 points | Previous AnswersBBUnderStat12 4.1.003.

What is the probability of the following.

(a) An event A that is certain to occur?

1 ✔

(b) An event B that is impossible?

0 ✔

Need Help? [Read It]

3. 1.16/1.16 points | Previous AnswersBBUnderStat12 4.1.004.

What is the law of large numbers?

- ○ As the sample size decreases, the relative frequency of outcomes gets closer to the theoretical probability of the outcome.

- ○ As the sample size increases, the cumulative frequency of outcomes gets closer to the theoretical probability of the outcome.

- ⦿ As the sample size increases, the relative frequency of outcomes gets closer to the theoretical probability of the outcome.

- ○ As the sample size increases, the relative frequency of outcomes moves further from the theoretical probability of the outcome.

✔

If you were using the relative frequency of an event to estimate the probability of the event, would it be better to use 100 trials or 500 trials? Explain.

- ⦿ It would be better to use 500 trials, because the law of large numbers would take effect.

- ○ It would be better to use 100 trials, because the law of large numbers would take effect.

- ○ It would be better to use 500 trials, because 100 trials is always too small.

- ○ It would be better to use 100 trials, because 500 trials is always too big.

✔

Need Help? [Read It]

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4. 1.16/1.16 points | Previous AnswersBBUnderStat12 4.1.007.MI.

A recent survey of 1070 U.S. adults selected at random showed that 629 consider the occupation of firefighter to have very great prestige. Estimate the probability (to the nearest hundredth) that a U.S. adult selected at random thinks the occupation of firefighter has very great prestige.

.59 ✔

Need Help? [Read It] [Master It]

Consider a family with 4 children. Assume the probability that one child is a boy is 0.5 and the probability that one child is a girl is also 0.5, and that the events "boy" and "girl" are independent.

(a) List the equally likely events for the gender of the 4 children, from oldest to youngest. (Let *M* represent a boy (male) and *F* represent a girl (female). Select all that apply.)

- ☑ *MMFF*
- ☑ *FFMM*
- ☐ two M's, two F's
- ☑ *MMMF*
- ☑ *MMFM*
- ☑ *FFMF*
- ☑ *MFMM*
- ☐ three M's, one F
- ☑ *FMFM*
- ☑ *MMMM*
- ☑ *FFFM*
- ☑ *MFFF*
- ☑ *FMMF*
- ☑ *MFMF*
- ☐ one M, three F's
- ☑ *FMMM*
- ☑ *FFFF*
- ☑ *FMFF*
- ☑ *MFFM*

✔

(b) What is the probability that all 4 children are male? (Enter your answer as a fraction.)

1/16 ✔

Notice that the complement of the event "all four children are male" is "at least one of the children is female." Use this information to compute the probability that at least one child is female. (Enter your answer as a fraction.)

15/16 ✔

Need Help? [Read It] [Master It]

Consider the following.

(a) Explain why −0.41 cannot be the probability of some event.

◉ A probability must be between zero and one.

○ A probability must be greater than one.

○ A probability must be an integer.

✔

(b) Explain why 1.21 cannot be the probability of some event.

◉ A probability must be between zero and one.

○ A probability must be an integer.

○ A probability must be negative.

✔

(c) Explain why 120% cannot be the probability of some event.

◉ A probability must be between zero and one.

○ A probability must be an integer.

○ A probability must be negative.

✔

(d) Can the number 0.56 be the probability of an event? Explain.

○ No, this is too large to be a probability.

○ No, a probability cannot be positive.

◉ Yes, it is a number between 0 and 1.

○ Yes, it is a number between 0.5 and 1.

✔

Need Help? [Read It]

7. 1.16/1.16 points | <u>Previous Answers</u>BBUnderStat12 4.1.017.

Isabel Briggs Myers was a pioneer in the study of personality types. The personality types are broadly defined according to four main preferences. Do married couples choose similar or different personality types in their mates? The following data give an indication.

Similarities and Differences in a Random Sample of 375 Married Couples

Number of Similar Preferences	Number of Married Couples
All four	31
Three	134
Two	118
One	62
None	30

Suppose that a married couple is selected at random.

(a) Use the data to estimate the probability that they will have 0, 1, 2, 3, or 4 personality preferences in common. (Enter your answers to 2 decimal places.)

0	1	2	3	4
.08 ✔	.17 ✔	.31 ✔	.36 ✔	.08 ✔

(b) Do the probabilities add up to 1? Why should they?

- ○ Yes, because they do not cover the entire sample space.
- ○ No, because they do not cover the entire sample space.
- ◉ Yes, because they cover the entire sample space.
- ○ No, because they cover the entire sample space.

✔

What is the sample space in this problem?

- ○ 0, 1, 2, 3 personality preferences in common
- ○ 1, 2, 3, 4 personality preferences in common
- ○ 0, 1, 2, 3, 4, 5 personality preferences in common
- ◉ 0, 1, 2, 3, 4 personality preferences in common

✔

Need Help? [Read It] [Watch It]

(a) If you roll a single die and count the number of dots on top, what is the sample space of all possible outcomes? Are the outcomes equally likely?

- ○ 0, 1, 2, 3, 4, 5, 6; equally likely
- ◉ 1, 2, 3, 4, 5, 6; equally likely
- ○ 1, 2, 3, 4, 5, 6; not equally likely
- ○ 0, 1, 2, 3, 4, 5, 6; not equally likely

✔

(b) Assign probabilities to the outcomes of the sample space of part (a). (Enter your answers as fractions.)

Outcome	Probability	
1	1/6	✔
2	1/6	✔
3	1/6	✔
4	1/6	✔
5	1/6	✔
6	1/6	✔

Do the probabilities add up to 1? Should they add up to 1? Explain.

- ○ Yes, but they should not because these values do not cover the entire sample space.
- ◉ Yes, because these values cover the entire sample space.
- ○ No, because these values do not cover the entire sample space.
- ○ No, but they should because these values cover the entire sample space.

✔

(c) What is the probability of getting a number less than 5 on a single throw? (Enter your answer as a fraction.)

4/6 ✔

(d) What is the probability of getting 2 or 3 on a single throw? (Enter your answer as a fraction.)

2/6 ✔

Need Help? [Read It] [Watch It]

A botanist has developed a new hybrid cotton plant that can withstand insects better than other cotton plants. However, there is some concern about the germination of seeds from the new plant. To estimate the probability that a seed from the new plant will germinate, a random sample of 3000 seeds was planted in warm, moist soil. Of these seeds, 2390 germinated.

(a) Use relative frequencies to estimate the probability that a seed will germinate. What is your estimate? (Enter your answer to 3 decimal places.)

.797 ✔

(b) Use relative frequencies to estimate the probability that a seed will *not* germinate. What is your estimate? (Enter your answer to 3 decimal places.)

.203 ✔

(c) Either a seed germinates or it does not. What is the sample space in this problem?

○ germinate

◉ germinate or not germinate

○ not germinate

✔

Do the probabilities assigned to the sample space add up to 1? Should they add up to 1? Explain.

◉ Yes, because they cover the entire sample space.

○ Yes, because they do not cover the entire sample space.

○ No, because they cover the entire sample space.

○ No, because they do not cover the entire sample space.

✔

(d) Are the outcomes in the sample space of part (c) equally likely?

○ yes

◉ no

✔

Need Help?   Read It   Watch It

10. 1.16/1.16 points | Previous AnswersBBUnderStat12 4.1.023.MI.

John runs a computer software store. Yesterday he counted 135 people who walked by the store, 64 of whom came into the store. Of the 64, only 21 bought something in the store. (Round your answers to two decimal places.)

(a) Estimate the probability that a person who walks by the store will enter the store.

.47 ✔

(b) Estimate the probability that a person who walks into the store will buy something.

.33 ✔

(c) Estimate the probability that a person who walks by the store will come in *and* buy something.

.16 ✔

(d) Estimate the probability that a person who comes into the store will buy nothing.

.67 ✔

Need Help? [Read It] [Watch It] [Master It]

11. 1.16/1.16 points | Previous AnswersBBUnderStat12 4.2.001.

If two events are mutually exclusive, can they occur concurrently? Explain.

○ Yes. By definition, mutually exclusive events can occur together.

◉ No. By definition, mutually exclusive events cannot occur together.

○ No. Two events will never occur concurrently.

○ Yes. Any two events can occur concurrently.

✔

Need Help? [Read It]

12. 1.16/1.16 points | Previous AnswersBBUnderStat12 4.2.002.

If two events A and B are independent and you know that $P(A) = 0.75$, what is the value of $P(A \mid B)$?

.75 ✔

Need Help? [Read It]

Given $P(A) = 0.5$ and $P(B) = 0.2$, do the following.

(a) If A and B are mutually exclusive events, compute $P(A \text{ or } B)$.

.7 ✔

(b) If $P(A \text{ and } B) = 0.3$, compute $P(A \text{ or } B)$.

.4 ✔

Need Help? [Read It] [Master It]

Given $P(A) = 0.2$ and $P(B) = 0.8$, do the following.

(a) If A and B are independent events, compute $P(A \text{ and } B)$.

.16 ✔

(b) If $P(A \mid B) = 0.9$, compute $P(A \text{ and } B)$.

.72 ✔

Need Help? [Read It] [Master It]

Given $P(A) = 0.6, P(B) = 0.5, P(A \mid B) = 0.3$, do the following.

(a) Compute $P(A \text{ and } B)$.

.15 ✔

(b) Compute $P(A \text{ or } B)$.

.95 ✔

Need Help? [Read It] [Master It]

Consider the following events for a driver selected at random from the general population.
A = driver is under 25 years old
B = driver has received a speeding ticket
Translate each of the following phrases into symbols.

(a) The probability the driver has received a speeding ticket and is under 25 years old.

○ *P*(*B* | *A*)

○ *P*(*B*ᶜ *or A*)

○ *P*(*A*ᶜ | *B*)

○ *P*(*A or B*)

◉ *P*(*A and B*)   ✔

(b) The probability a driver who is under 25 years old has recieved a speeding ticket.

◉ *P*(*B* | *A*)

○ *P*(*B*ᶜ *or A*)

○ *P*(*A*ᶜ | *B*)

○ *P*(*A or B*)

○ *P*(*A and B*)   ✔

(c) The probability a driver who has received a speeding ticket is 25 years old or older.

○ *P*(*B* | *A*)

○ *P*(*B*ᶜ *or A*)

◉ *P*(*A*ᶜ | *B*)

○ *P*(*A or B*)

○ *P*(*A and B*)   ✔

(d) The probability the driver is under 25 years old or has received a speeding ticket.

○ P(B | A)

○ P(Bᶜ or A)

○ P(Aᶜ | B)

◉ P(A or B)

○ P(A and B)

✔

(e) The probability the driver has not received a speeding ticket or is under 25 years old.

○ P(B | A)

◉ P(Bᶜ or A)

○ P(Aᶜ | B)

○ P(A or B)

○ P(A and B)

✔

Need Help? | Read It |

M&M plain candies come in various colors. According to the M&M/Mars Department of Consumer Affairs, the distribution of colors for plain M&M candies is as follows.

Color	Purple	Yellow	Red	Orange	Green	Blue	Brown
Percentage	20%	20%	23%	7%	8%	6%	16%

Suppose you have a large bag of plain M&M candies and you choose one candy at random.

(a) Find P(green candy *or* blue candy).

.14 ✔

Are these outcomes mutually exclusive? Why?

○ No. Choosing a green and blue M&M is possible.

○ Yes. Choosing a green and blue M&M is possible.

○ No. Choosing a green and blue M&M is not possible.

◉ Yes. Choosing a green and blue M&M is not possible.

✔

(b) Find P(yellow candy *or* red candy).

.43 ✔

Are these outcomes mutually exclusive? Why?

○ Yes. Choosing a yellow and red M&M is possible.

◉ Yes. Choosing a yellow and red M&M is not possible.

○ No. Choosing a yellow and red M&M is possible.

○ No. Choosing a yellow and red M&M is not possible.

✔

(c) Find P(*not* purple candy).

.80 ✔

Need Help? [Read It] [Watch It]

A national park is famous for its beautiful desert landscape and its many natural rock formations. The following table is based on information gathered by a park ranger of all rock formations of at least 3 feet. The height of the rock formation is rounded to the nearest foot.

Height of rock formation, feet	3–9	10–29	30–49	50–74	75 and higher
Number of rock formations in park	111	95	27	24	10

For a rock formation chosen at random from this park, use the preceding information to estimate the probability that the height of the rock formation is as follows. (Round your answers to two decimal places.)

(a) 3 to 9 feet

.42 ✔

(b) 30 feet or taller

.23 ✔

(c) 3 to 49 feet

.87 ✔

(d) 10 to 74 feet

.55 ✔

(e) 75 feet or taller

.04 ✔

Need Help? [Read It]

A recent study gave the information shown in the table about ages of children receiving toys. The percentages represent all toys sold.

Age (years)	Percentage of Toys
2 and under	17%
3-5	15%
6-9	23%
10-12	13%
13 and over	32%

What is the probability that a toy is purchased for someone in the following age ranges?

(a) 6 years old or older

68 ✔ %

(b) 12 years old or younger

68 ✔ %

(c) between 6 and 12 years old

36 ✔ %

(d) between 3 and 9 years old

38 ✔ %

A child between 10 and 12 years old looks at this probability distribution and asks, "Why are people more likely to buy toys for kids older than I am (13 and over) than for kids in my age group (10 −12)?" How would you respond?

○ The 13-and-older category may include children up to 17 or 18 years old. This is a smaller category.

◉ The 13-and-older category may include children up to 17 or 18 years old. This is a larger category.

✔

Need Help? [Read It]

In a sales effectiveness seminar, a group of sales representatives tried two approaches to selling a customer a new automobile: the aggressive approach and the passive approach. For 1160 customers, the following record was kept:

	Sale	No Sale	Row Total
Aggressive	270	310	580
Passive	466	114	580
Column Total	736	424	1160

Suppose a customer is selected at random from the 1160 participating customers. Let us use the following notation for events: A = aggressive approach, Pa = passive approach, S = sale, N = no sale. So, $P(A)$ is the probability that an aggressive approach was used, and so on.

(a) Compute $P(S)$, $P(S \mid A)$, and $P(S \mid Pa)$. (Enter your answers as fractions.)

$P(S)$ = 736/1160 ✔

$P(S \mid A)$ = 270/580 ✔

$P(S \mid Pa)$ = 466/580 ✔

(b) Are the events S = sale and Pa = passive approach independent? Explain.

○ Yes. The two events can occur together.

⦿ No. $P(S) \neq P(S \mid Pa)$.

○ No. The two events cannot occur together.

○ Yes. $P(S) = P(S \mid Pa)$.

✔

(c) Compute $P(A \text{ and } S)$ and $P(Pa \text{ and } S)$. (Enter your answers as fractions.)

$P(A \text{ and } S)$ = 270/1160 ✔

$P(Pa \text{ and } S)$ = 466/1160 ✔

(d) Compute $P(N)$ and $P(N \mid A)$. (Enter your answers as fractions.)

$P(N)$ = 424/1160 ✔

$P(N \mid A)$ = 310/580 ✔

(e) Are the events N = no sale and A aggressive approach independent? Explain.

○ No. The two events cannot occur together.

○ Yes. $P(N) = P(N \mid A)$.

○ Yes. The two events can occur together.

⦿ No. $P(N) \neq P(N \mid A)$.

✔

(f) Compute $P(A \text{ or } S)$. (Enter your answer as a fraction.)

$P(A \text{ or } S)$ = 1046/1160 ✔

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21. 1.16/1.16 points | Previous Answers BBUnderStat12 4.2.033.MI.

A particular shoe franchise knows that its stores will not show a profit unless they gross over $940,000 per year. Let *A* be the event that a new store grosses over $940,000 its first year. Let *B* be the event that a store grosses over $940,00 its second year. The franchise has an administrative policy of closing a new store if it does not show a profit in *either* of the first 2 years. The accounting office at the franchise provided the following information: 65% of *all* the franchise stores show a profit the first year; 71% of *all* the franchise stores show a profit the second year (this includes stores that did not show a profit the first year); however, 85% of the franchise stores that showed a profit the first year also showed a profit the second year. Compute the following. (Enter your answers to four decimal places.)

(a)   *P*(*A*)
.65 ✔

(b)   *P*(*B*)
.71 ✔

(c)   *P*(*B* | *A*)
.85 ✔

(d)   *P*(*A and B*)
.5525 ✔

(e)   *P*(*A or B*)
.8075 ✔

(f)   What is the probability that a new store will not be closed after 2 years?
.8075 ✔

What is the probability that a new store will be closed after 2 years?
.1925 ✔

For each of the following situations, explain why the combinations rule or the permutations rule should be used.

(a) Determine the number of different groups of 5 items that can be selected from 12 distinct items.

○ Use the permutations rule, since the number of arrangements within each group is of interest.

○ Use the combinations rule, since the number of arrangements within each group is of interest.

◉ Use the combinations rule, since only the items in the group is of concern.

○ Use the permutations rule, since only the items in the group is of concern.

✔

(b) Determine the number of different arrangements of 5 items that can be selected from 12 distinct items.

○ Use the combinations rule, since the number of arrangements within each group is of interest.

◉ Use the permutations rule, since the number of arrangements within each group is of interest.

○ Use the permutations rule, since only the items in the group is of concern.

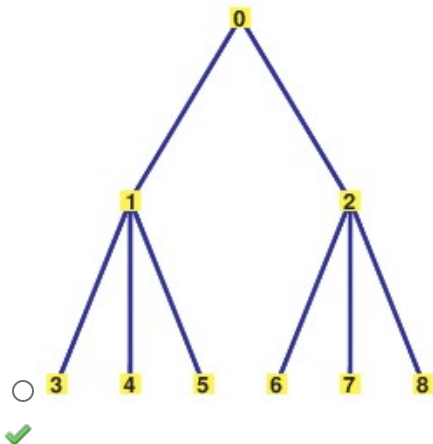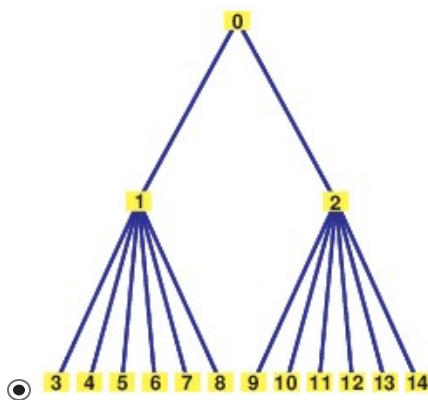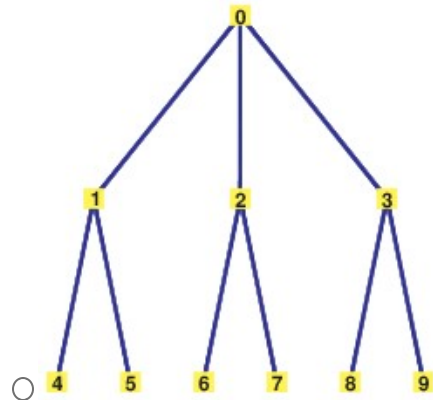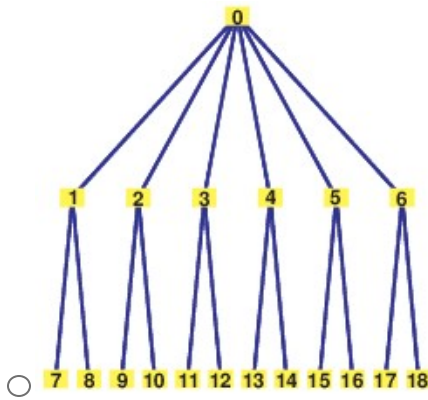○ Use the combinations rule, since only the items in the group is of concern.

✔

Need Help? [Read It]

Consider the following.

(a) Draw a tree diagram to display all the possible outcomes that can occur when you flip a coin and then toss a die.

(b) How many outcomes contain a head and a number greater than 4?

2 ✔

(c) *Probability extension:* Assuming the outcomes displayed in the tree diagram are all equally likely, what is the probability that you will get a head and a number greater than 4 when you flip a coin and toss a die? (Round your answer to three decimal places.)
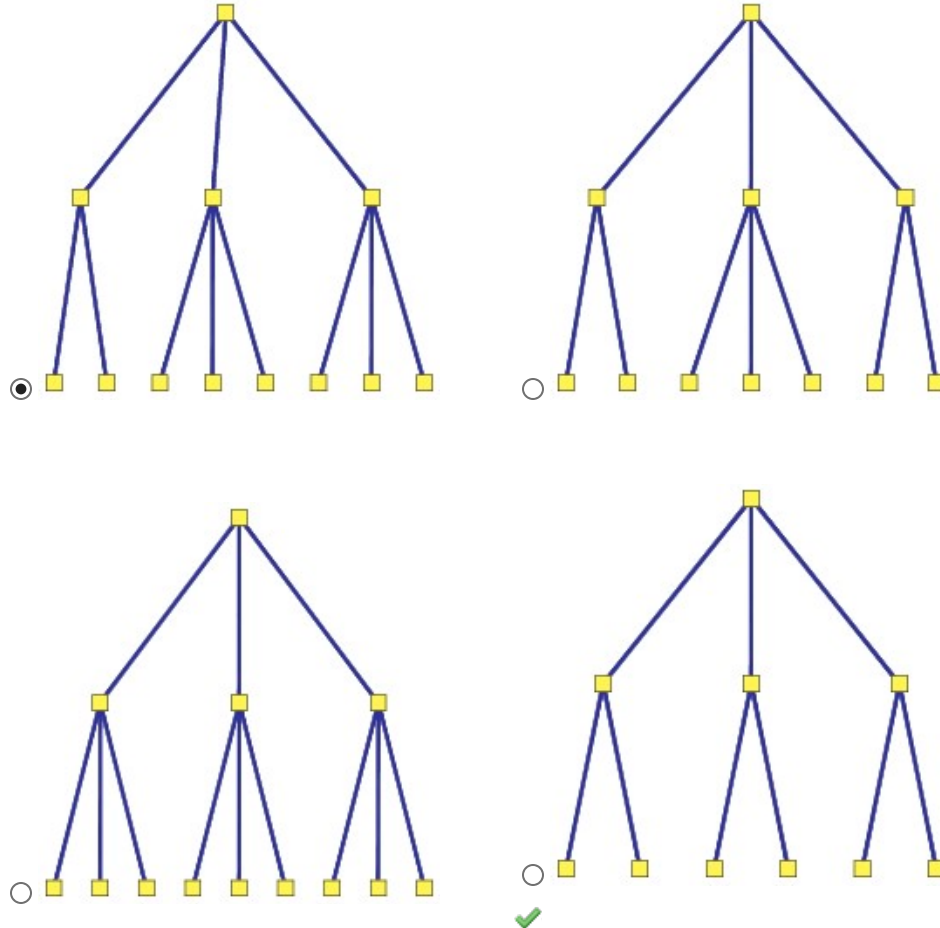
.167 ✔

Need Help?   Read It

There are ten balls in an urn. They are identical except for color. Four are red, five are blue, and one is yellow. You are to draw a ball from the urn, note its color, and set it aside. Then you are to draw another ball from the urn and note its color.

(a) Make a tree diagram to show all possible outcomes of the experiment.

(b) Let P(x, y) be the probability of choosing an x-colored ball on the first draw and a y-colored ball on the second draw. Compute the probability for each outcome of the experiment. (Enter your answers as fractions.)

P(R, R) = 2/15 ✔

P(R, B) = 2/9 ✔

P(R, Y) = 2/45 ✔

P(B, R) = 2/9 ✔

P(B, B) = 2/9 ✔

P(B, Y) = 1/18 ✔

P(Y, R) = 2/45 ✔

P(Y, B) = 1/18 ✔

Need Help? [Read It] [Watch It]

25. 1.16/1.16 points | <u>Previous Answers</u>BBUnderStat12 4.3.009.

There are six wires which need to be attached to a circuit board. A robotic device will attach the wires. The wires can be attached in any order, and the production manager wishes to determine which order would be fastest for the robot to use. Use the multiplication rule of counting to determine the number of possible sequences of assembly that must be tested. (*Hint:* There are six choices for the first wire, five for the second wire, four for the third wire, etc.)

720 ✔

Need Help? [Read It] [Watch It]

26. 1.16/1.16 points | <u>Previous Answers</u>BBUnderStat12 4.3.011.MI.

Barbara is a research biologist for Green Carpet Lawns. She is studying the effects of fertilizer type, temperature at time of application, and water treatment after application. She has four fertilizer types, five temperature zones, and three water treatments to test. Determine the number of different lawn plots she needs in order to test each fertilizer type, temperature range, and water treatment configuration.

60 ✔

Need Help? [Read It] [Master It]

27. 1.16/1.16 points | <u>Previous Answers</u>BBUnderStat12 4.3.013.MI.

Compute $P_{9,2}$.

72 ✔

Need Help? [Read It] [Master It]

28. 1.16/1.16 points | <u>Previous Answers</u>BBUnderStat12 4.3.017.MI.

Compute $C_{5,2}$.

10 ✔

Need Help? [Read It] [Watch It] [Master It]

29. 1.16/1.16 points | <u>Previous Answers</u>BBUnderStat12 4.3.022.

In the Cash Now lottery game there are 11 finalists who submitted entry tickets on time. From these 11 tickets, three grand prize winners will be drawn. The first prize is one million dollars, the second prize is one hundred thousand dollars, and the third prize is ten thousand dollars. Determine the total number of different ways in which the winners can be drawn. (Assume that the tickets are not replaced after they are drawn.)

990 ✔

Need Help? [Read It] [Watch It]

30. 1.36/1.36 points | <u>Previous Answers</u>BBUnderStat12 4.3.025.

There are 10 qualified applicants for 6 trainee positions in a fast-food management program. How many different groups of trainees can be selected?

210 ✔

Need Help? [Read It] [Watch It]