

Worksheet Answer Key

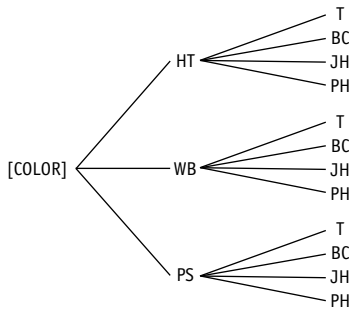
Worksheet 1: "Smartphone Test Prep"

1. 12 outfits:

HT	HT	HT	HT
T	BC	JH	PH
WB	WB	WB	WB
T	BC	JH	PH
PS	PS	PS	PS
T	BC	JH	PH

Key: HT (high-tops); BC (biker cap); T (tiara); JH (jester's hat); WB (work boots); PH (pith helmet); PS (platform shoes)

2. 24 outfits, comprising two trees, one for chartreuse and one for teal:



Note that the decision tree could be constructed with any of the three wardrobe items as the first, second, or third point on the decision tree.

3. 48 outfits (2 necklaces x 2 vests x 3 footwear x 4 headgear)

Now Try This: The probability of any one outfit being selected is $1/48$ or 2.1% (rounded to the nearest tenth of a percent).

Worksheet 2: "A Call for Assistants"

- The sample is 2% of the population (75/3,750). Answers will vary, depending on the student's knowledge of statistical sampling concepts. Students might mention that they would want to know more about how the sample was selected and may question whether or not they can be confident that a sample of 75 will enable them to make inferences about the population as a whole.
- 70% (the sum of the probabilities for revenues of \$20,000, \$30,000, and \$50,000)
- 20% (the sum of the probabilities for revenues of \$1,000 and \$7,000)
- There is also a 10% probability that the new service will break even.
- Answers will vary. The students' tolerance for risk should be addressed as they defend their answers. *Risk tolerance* is the willingness to lose money in exchange for the possibility to gain money. Students with more tolerance for losing money may answer that Rick and Athena should expand and vice versa.

Now Try This:

- 300 viewers ($50,000/2,000 \times 12$)
- 43,100 viewers ($50,000/2,000 \times 1,724$)
- Answers will vary, depending on the student's knowledge of statistical sampling concepts. Students might mention that they would want to know more about how the sample was selected and may question whether or not they can be confident that a sample of 2,000 will enable them to make inferences about the population as a whole.

Worksheet 3: "Math Masters"

- Contestant A: 81.5% ($.95 \times .95 \times .95 \times .95$)
Contestant B: 65.6% ($.9 \times .9 \times .9 \times .9$)
Contestant C: 41.0% ($.8 \times .8 \times .8 \times .8$)
- Contestant A: 77.4% ($.95 \times .95 \times .95 \times .95 \times .95$)
Contestant B: 59.0% ($.9 \times .9 \times .9 \times .9 \times .9$)
Contestant C: 32.8% ($.8 \times .8 \times .8 \times .8 \times .8$)
- 21.9% ($.815 \times .656 \times .41$)

Now Try This: 54.0% ($.75 \times .80 \times .90$). Although tree diagrams and organized lists could be used, the quickest method is to simply multiply the probabilities of each individual event.

Bonus Worksheet: "Mind Your Own Business!"

- Investment analysts generally consider FDIC-insured accounts to be risk free, so the risk would be 0%. The U.S. government would have to fail for the certificates to become worthless.
- 15% ($3/20$)
- Answers will vary, depending on the student's tolerance for risk. To the risk-averse student, the certificate of deposit's guaranteed return of 1% will be more attractive than any investment that has a chance to decline in value. A student with a higher tolerance for risk and/or a longer-term investment horizon would favor the mutual fund because, historically, increases have averaged 7%.

Now Try This: Answers will vary, but should indicate that the investment is highly risky with a small probability of a significant profit.