Solutions

Nov 20-18:35

1. Make a list and a tree diagram illustrating the outcomes on a true or false quiz with five questions. How many different ways are there to answer the five questions?

32 different ways
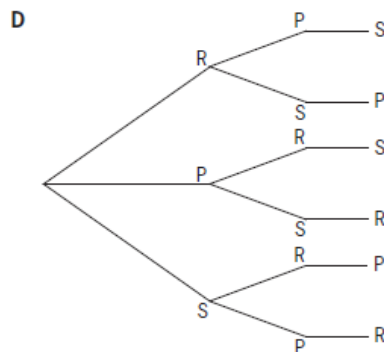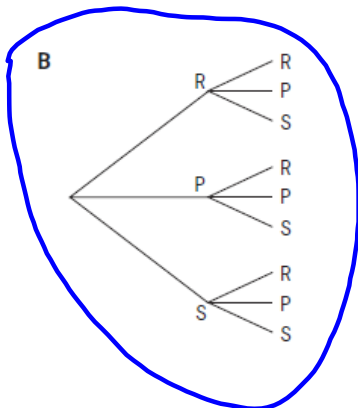

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2. A spinner is divided into three equal sections. Make a tree diagram and state the number of outcomes if the spinner is spun

a) twice

b) three times

a) 9 outcomes
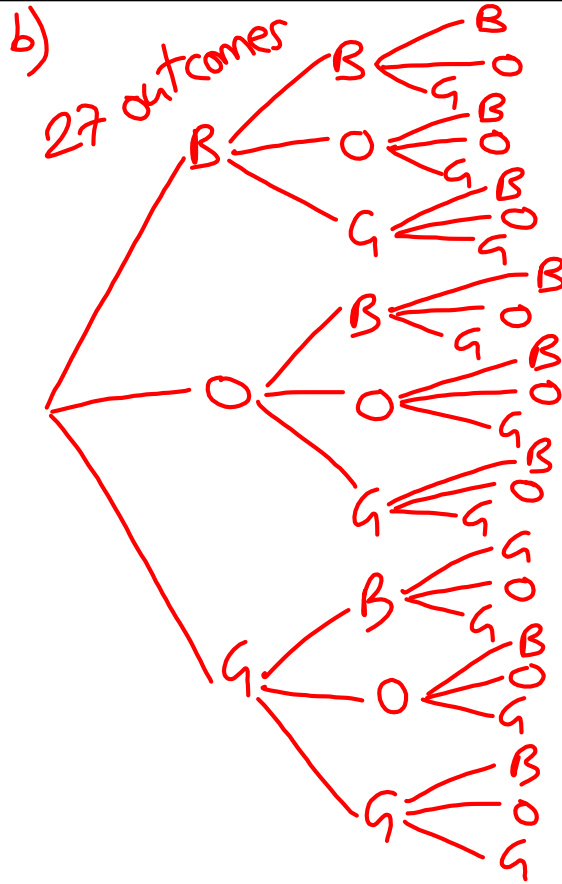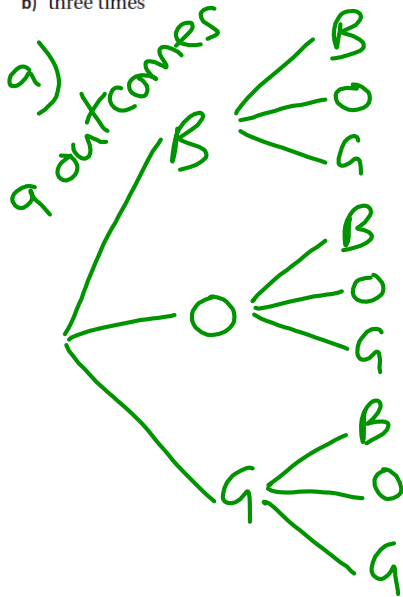
b) 27 outcomes

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3. In the game Rock-Paper-Scissors, two competitors use hand signals to indicate either rock, paper, or scissors. Consider each competitor as a stage. Which tree diagram correctly illustrates the outcomes of the game?

A

C

B

D
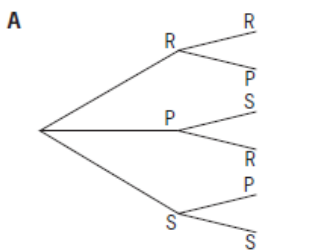
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4. A single die is rolled twice. What is the best description of the tree diagram illustrating this event?

A   six stages, two branches per stage, 36 outcomes

B   two stages, six branches per stage, 12 outcomes

C   two stages, six branches per stage, 36 outcomes

D   six stages, six branches per stage, 36 outcomes

Stage = a roll of the die

Branch = an outcome (number on the die)

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6. Application In a best-of-five hockey playoff, the winner of the series is declared once a team wins three games. Ties are not allowed.

    a) Draw a tree diagram illustrating all the possible outcomes in a best-of-five series.

    b) List all the outcomes.

    c) How many outcomes are possible?

20 possible outcomes (highlighted)

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3
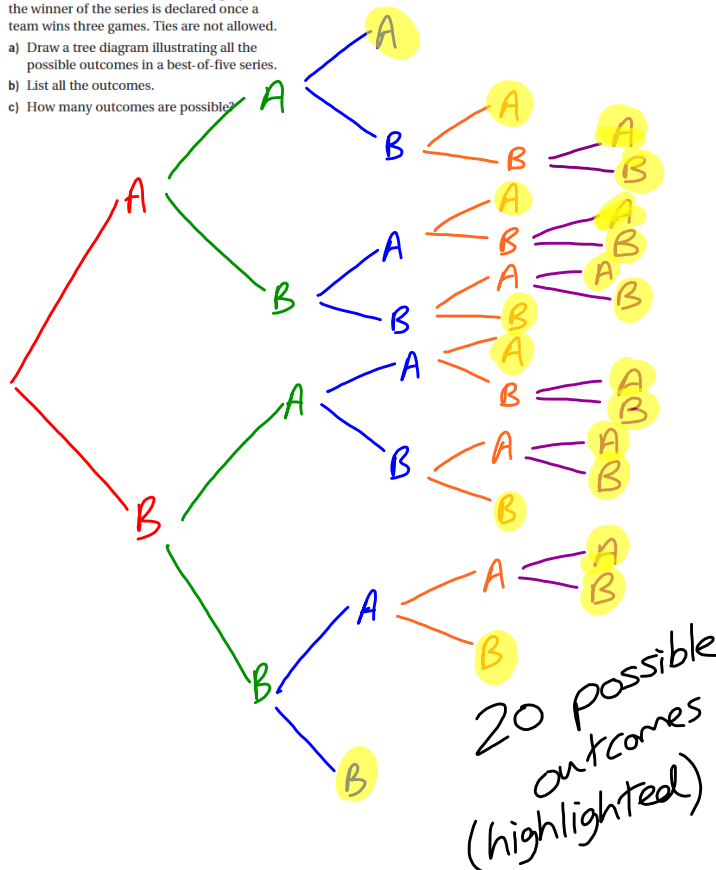
7. Two people will be chosen to be on a dance committee from Alicia, Benoit, Chantel, Daniqua, Eddie, and Farid.

   a) Make a chart to illustrate this situation.

   b) How many outcomes are possible?

   c) **Communication** How many outcomes are truly different if order is not important? Explain.

|	A	B	C	D	E	F
A	×	AB	AC	AD	AE	AF
B	BA	×	BC	BD	BE	BF
C	CA	CB	×	CD	CE	CF
D	DA	DB	DC	×	DE	DF
E	EA	EB	EC	ED	×	EF
F	FA	FB	FC	FD	FE	×

b) 30 outcomes

c) If order NOT important, then there are only 15 possible outcomes because each pair is repeated (AB is the same as BA).

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10. To get from her house to the shopping mall, Cathie can walk along Main Street, through the park, or along a path out of her subdivision. From Main Street, there are two streets that go to the mall. From the park, there are four streets that go to the mall. From the path, there is only one street that goes to the mall.

    a) Illustrate Cathie's choices with a map and a tree diagram.

    b) How many different routes are there for Cathie to get to the shopping mall?

a)

MS — Mall / Mall

Park — Mall / Mall / Mall / Mall

Path — Mall
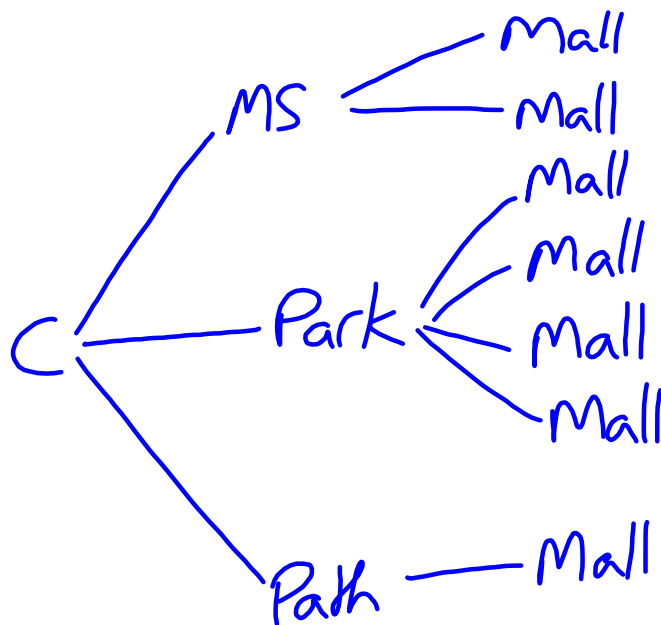
b) 7 different routes.

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12. **Thinking** Pinetree Homes builds new homes with white, grey, or tan siding. The trim is white, black, almond, brown, or grey. Garage doors are painted white, grey, or tan.

a) How many different colour configurations does Pinetree Homes offer?

Siding = 3   ⟹ 3 × 5 × 3 = 45 configurations
Trim = 5
Garage doors = 3

b) Which would increase the number of choices by a greater amount—an additional siding colour or an additional trim colour? Justify your answer.
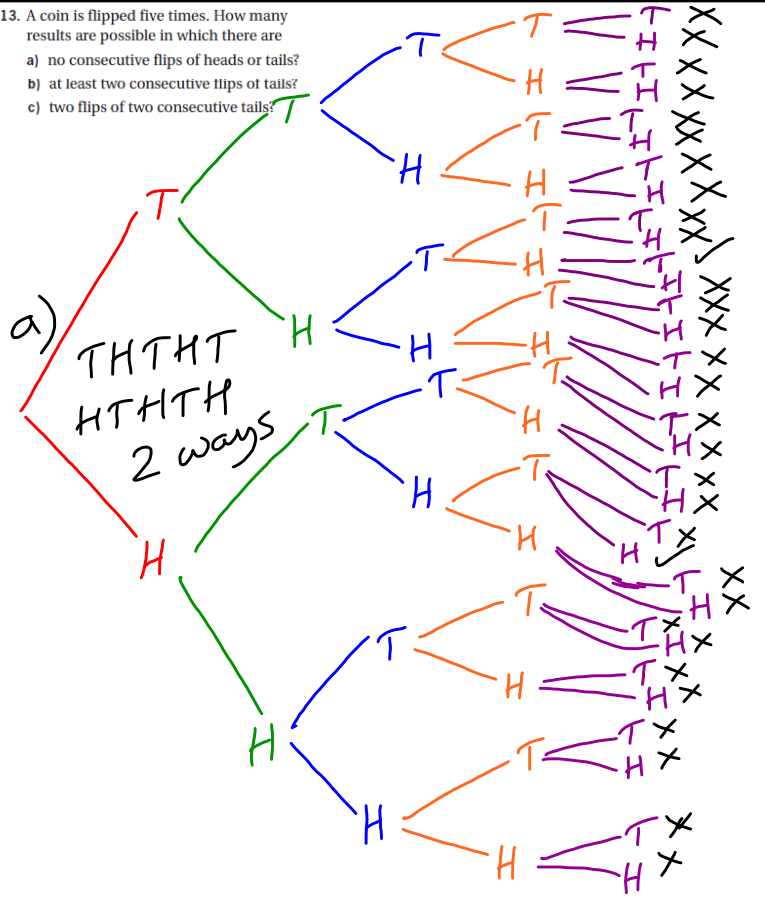
Option 1
Siding = 4
Trim = 5
Garage doors = 3
⟹ 4 × 5 × 3 = 60

Option 2
Siding = 3
Trim = 6
Garage doors = 3
⟹ 3 × 6 × 3 = 54

Add an additional siding colour to increase number of configurations.

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13. A coin is flipped five times. How many results are possible in which there are

a) no consecutive flips of heads or tails?
b) at least two consecutive flips of tails?
c) two flips of two consecutive tails?

a) THTHT
HTHTH
2 ways

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13. A coin is flipped five times. How many results are possible in which there are

a) no consecutive flips of heads or tails?

b) at least two consecutive flips of tails?

c) two flips of two consecutive tails?

b)

19 ways

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13. A coin is flipped five times. How many results are possible in which there are

a) no consecutive flips of heads or tails?

b) at least two consecutive flips of tails?

c) two flips of two consecutive tails?

c)

4 ways

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