Chapter 2 practice problems

Determine if each of the following arguments is valid or invalid.

(1)   [P1] Either today is Labor Day, or the building is full.
        [P2] The building isn't full.
        [C] Therefore, today is Labor Day.

(2)   [P1] If the green van is missing, then Claire is at the beach.
        [P2] The green van is missing.
        [C] Therefore, Claire is at the beach.

(3)   If Jones decided that she is going to get divorced, then she called a lawyer. Jones just called
        a lawyer. Hence, she has decided that she's going to get divorced.

(4)   [P1] Jeff is playing basketball, or Mary is watching television.
        [P2] Mary is watching television.
        [C] Therefore, Jeff is playing basketball.

(5)   [P1] 160 12th graders at Central High School were asked if they planned to go to college next year.
        [P2] 75 percent said that they were planning to go to college the following year.
        [C] Therefore, about 75 percent of all the 12th graders at Central High School are probably going to
             college next year.

(6)   [P1] If Mary stole the painting, then Jeff is in New Jersey.
        [C] Therefore, if Jeff is in New Jersey, then Mary stole the painting.

(7)   [P1] As vacation destinations, Florence and Lisbon have many similarities: nice weather, historical
        attractions, and great restaurants.
        [P2] Sarah enjoyed visiting Florence.
        [C] Therefore, Sarah will probably enjoy visiting Lisbon.

(8)   [P1] If Mary stole the painting, then Jeff is in New Jersey.
        [C] Therefore, if Jeff is not in New Jersey, then Mary did not steal the painting.

(9)   [P1] Amy is on campus.
        [C] Therefore, Amy is on campus, or she is on the moon.

(10)   [P1] Jack is taking a nap.
        [C] Therefore, Jack is taking a nap, and Kate is reading.

(11)   [P1] If Roger is in the bank, then Steven is waiting in the apartment.
        [P2] Roger is not in the bank.
        [C] Therefore, Steven is not waiting in the apartment.

(12)   [P1] If Joan is at work, then Kate is sleeping.
        [C] Therefore, if Kate is not sleeping, then Joan is not at work.

(13)   [P1] If Mary is in the library, then Jeff is watching tv.
        [P2] If Jeff is watching tv, then Claire is taking a nap.
        [C] Therefore, if Claire is taking a nap, then Mary is in the library.

(14)   [P1] If Mary is in the library, then Jeff is watching tv.
         [P2] If Jeff is watching tv, then Claire is taking a nap.
         [C] Therefore, if Mary is in the library, then Claire is taking a nap.

(15)   [P1] If Mary is in the library, then Jeff is watching tv.
         [P2] If Jeff is watching tv, then Claire is taking a nap.
         [C] Therefore, if Claire is not taking a nap, then Mary is not in the library.

(16)   [P1] George is an architect, or Susan is a lawyer.
         [P2] George is not an architect.
         [C] Therefore, Susan is a lawyer.

(17)   [P1] Amy is walking in the park, or Sarah is playing basketball.
         [P2] Amy is walking in the park.
         [C] Therefore, Sarah is not playing basketball.

(18)   [P1] George is mowing the lawn.
         [C] Therefore, George is mowing the lawn, and Fred is looking for his coat.

(19)   [P1] Almost all sea lions live in the Atlantic Ocean around New York and New Jersey.
         [P2] Sammy is a sea lion.
         [C] Therefore, Sammy lives in the Atlantic Ocean around New York and New Jersey.

(20)   [P1] All sea lions live in the Atlantic Ocean around New York and New Jersey.
         [P2] Sammy is a sea lion.
         [C] Therefore, Sammy lives in the Atlantic Ocean around New York and New Jersey.

Answers

(1)   [P1] Either today is Labor Day, or the building is full.
       [P2] The building isn't full.
       [C] Therefore, today is Labor Day.

       This argument is valid.

(2)   [P1] If the green van is missing, then Claire is at the beach.
       [P2] The green van is missing.
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       This argument is valid.

(3)   If Jones decided that she is going to get divorced, then she called a lawyer. Jones just called
       a lawyer. Hence, she has decided that she's going to get divorced.

       This argument is invalid.

(4)   [P1] Jeff is playing basketball, or Mary is watching television.
       [P2] Mary is watching television.
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       This argument is invalid.

(5)   [P1] 240 12th graders at Central High School were asked if they planned to go to college next year.
       [P2] 75 percent said that they were planning to go to college the following year.
       [C] Therefore, about 75 percent of all the 12th graders at Central High School are probably going to
           college next year.

       This argument is invalid.

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(7)   [P1] As vacation destinations, Florence and Lisbon have many similarities: nice weather, historical
       attractions, and great restaurants.
       [P2] Sarah enjoyed visiting Florence.
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       This argument is invalid.

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       This argument is valid.

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          This argument is invalid.

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(17)   [P1] Amy is walking in the park, or Sarah is playing basketball.
         [P2] Amy is walking in the park.
         [C] Therefore, Sarah is not playing basketball.

         For the way that we will define 'or' in the logic system that is developed in this textbook, this
         argument is invalid.

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         This argument is invalid.

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