

Implication Equivalent Forms Worksheet 2 Solutions

Question 1

The statement says Q is necessary for P , where P is $x = 3$ and Q is $x^2 = 9$. This is the same as $P \Rightarrow Q$, or $x = 3$ only if $x^2 = 9$.

The answer is **B**.

Question 2

The original statement is $P \Rightarrow Q$, where P is being marked FRAGILE and Q is being carried by hand. Option D says P is necessary for Q , which reverses the direction.

The answer is **D**.

Question 3

If Q is an inevitable consequence of P , then $P \Rightarrow Q$. Here P is being a moon-token and Q is shining blue, so shining blue is necessary for being a moon-token.

The answer is **C**.

Question 4

The statement says P is sufficient for Q , where P is having three equal sides and Q is having at least two equal sides. This is equivalent to saying Q is necessary for P .

The answer is **A**.

Question 5

The phrase P only if Q means $P \Rightarrow Q$. Here P is the document being approved and Q is having a green signature.

The answer is **D**.

Question 6

The original statement is $P \Rightarrow Q$, where P is being divisible by 12 and Q is being divisible by 3. Option D says Q is sufficient for P , which reverses the direction.

The answer is **D**.

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Question 7

The statement has the form $P \Rightarrow Q$, where P is the mirror cracking and Q is the alarm flashing. This is the same as saying Q is necessary for P .

The answer is **C**.

Question 8

The phrase Q is necessary for P means $P \Rightarrow Q$. Here P is satisfying rule R and Q is being in the set S , so satisfying rule R is sufficient for being in the set S .

The answer is **B**.

Question 9

The original statement is $P \Rightarrow Q$, where P is being a flom and Q is having silver eyelashes. Option C says Q only if P , which is $Q \Rightarrow P$.

The answer is **C**.

Question 10

The phrase P is sufficient for Q means $P \Rightarrow Q$. This is equivalent to saying Q is necessary for P .

The answer is **A**.

Question 11

The statement means if the lantern is lit, then the bridge appears. This is the same as saying the lantern is lit only if the bridge appears.

The answer is **B**.

Question 12

The phrase Q is necessary for P means $P \Rightarrow Q$. Options A, B and C all keep this direction. Option D says Q is sufficient for P , which reverses the direction.

The answer is **D**.

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Question 13

The statement is $P \Rightarrow Q$, where P is being vertical and Q is being not horizontal. This is equivalent to saying Q is necessary for P .

The answer is **A**.

Question 14

If Q is an inevitable consequence of P , then $P \Rightarrow Q$. Here P is scoring above 90 and Q is being selected for Team A. Option D reverses the direction.

The answer is **D**.

Question 15

The word “must” shows a necessary condition. Humming at midnight is necessary for being a crindle, so being a crindle implies humming at midnight.

The answer is **B**.

Question 16

The statement is $P \Rightarrow Q$, where P is being a multiple of 18 and Q is being not prime. This is equivalent to saying Q is necessary for P .

The answer is **A**.

Question 17

The statement says P is sufficient for Q , so it means $P \Rightarrow Q$. Options A, B and C all express this. Option D says Q only if P , which is $Q \Rightarrow P$.

The answer is **D**.

Question 18

The phrase P only if Q means $P \Rightarrow Q$. Here P is being a square and Q is having at least one pair of parallel sides.

The answer is **A**.

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Question 19

The original statement is $P \Rightarrow Q$, where P is the password being correct and Q is the screen unlocking. This is the same as saying Q is an inevitable consequence of P .

The answer is **C**.

Question 20

The statement says Q is necessary for P , where P is having $a = 4$ and $b = 6$, and Q is having $a + b = 10$. Option D says Q is sufficient for P , which reverses the direction.

The answer is **D**.

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