LOGICAL REASONING   (Answers on pages 2 - 7)
DEDUCTIONS – 1

1) Statements:
    Some towers are large
    All giraffes are towers

    Conclusions:
    Some large are towers
    All towers are giraffes

2) Statements:
    All clowns are funny
    Some actors are clowns

    Conclusions:
    All clowns are actors
    Some actors are funny

3) Statements:
    All dams are full
    All rivers are full

    Conclusions:
    Some full are rivers
    Some rivers are dams

4) Statements:
    Some robots are divers
    All divers are swimmers

    Conclusions:
    Some swimmers are divers
    Most robots are swimmers

5) Statements:
    All pens are balls
    All pens are clear

    Conclusions:
    Clear are balls
    Some balls are clear

6) Statements:
    Some rays are laser
    Some lasers are sharp

    Conclusions:
    Some sharp are rays
    Some rays are not sharp

7) Statements:
    All fit are games
    Some tidy are games

    Conclusions:
    Most tidy are fit
    No games are tidy

8) Statements:
    No family is joint
    Some joint is large

    Conclusions:
    Some families are large
    No joint is family

9) Statements:
    Some cars are hybrid
    Some hybrids are fast

    Conclusions:
    Some cars are fast
    No cars are fast

10) Statements:
    All clones are genes
    Some zygotes are genes

    Conclusions:
    No zygotes are clones
    Some clones are zygotes

11) Statements:
    Some clicks are mouse
    No disks are printers

    Conclusions:
    Some mouse are not printers
    All mouse are printers

Approach:

First of all, draw a **basic diagram** (diagram with the **least possible overlap**) in accordance with the given statements (premises), then check whether the given conclusions valid for the basic diagram or it is invalid for the basic diagram. Look at the YouTube Video Sessions for more details about drawing basic diagrams:

Basics 1: https://youtu.be/DTJzRnZoXkM Basics 2: https://youtu.be/BvedmO-UdXs

There are four possible options when the conclusion is evaluated with the basic diagram.

Option 1:

A positive conclusion is valid for the basic diagram, then it **follows** the statements. Look at the YouTube Video for more details: https://youtu.be/j6pclg7RGgQ

Option 2:

A positive conclusion is invalid for the basic diagram, then it **doesn't follow** the statements.

Option 3:

A negative conclusion is invalid for the basic diagram, then it **doesn't follow** the statements.

Option 4:

A negative conclusion is valid for the basic diagram, then there are four steps involved to reach the answer. Look at the YouTube Video for more details: https://youtu.be/og0QaHeKTew.

Step 1: Negate the given negative conclusion which is valid for the basic diagram. (Negation is the process of changing the negative conclusion to a positive conclusion).

Step 2: Draw a NEW diagram (NOT the basic diagram) using the negated conclusion.

Step 3: Check the NEW diagram exists or not (Compare it with the given statements).

Step 4: If the NEW diagram exists, then the original conclusion doesn't follow and if the NEW diagram doesn't exist, then the original conclusion follows.

Answers:

1) ***Ans: Only Conclusion I follows***

Conclusion I:"Some large are towers" (Valid for the basic diagram below, so the conclusion I follows the statements)
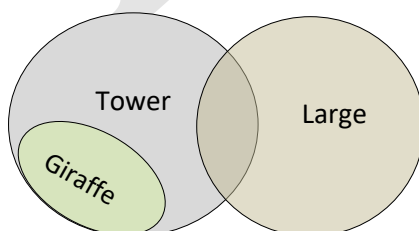
Conclusion II: "All towers are giraffes" (Invalid for the basic diagram, so the conclusion II doesn't follow the statements)

Statements:
Some towers are large
All giraffes are towers

Basic Diagram

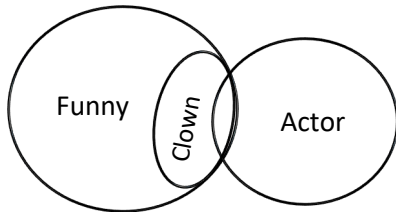2) ***Ans: Only Conclusion II follows***

Conclusion I: "All clowns are actors " (Invalid for the basic diagram below, so the conclusion doesn't follow the statements)

Conclusion II: "Some actors are funny" (Valid for the basic diagram, so it follows)

Statements:

All clowns are funny   Some actors are clowns

Basic Diagram
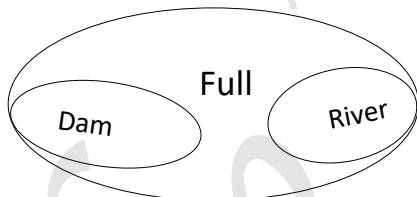

3) **Ans: Only Conclusion I follows**

Conclusion I: "Some full are rivers" (Valid for the basic diagram below, so the conclusion follows the statements)

Conclusion II: "Some rivers are dams" (Invalid for basic diagram, doesn't follow)

Statements:

All dams are full   All rivers are full

Basic Diagram

4) ***Ans: Both Conclusions I and II follow***

Conclusion I: "Some swimmers are divers" (Valid for the basic diagram below, so it follows)

Conclusion II: "~~Most~~ Some robots are swimmers" (***Most means Some***, hence Most is replaced with the word Some) (Valid for the basic diagram, conclusion follows)

Statements: Some robots are divers   All divers are swimmers
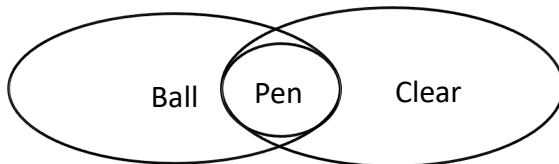
Basic Diagram
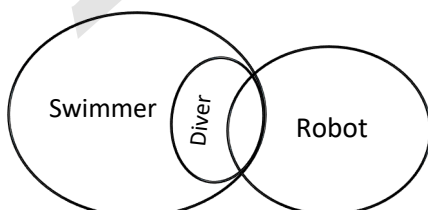
5) ***Ans: Only Conclusions II follows***
Conclusion I: "Clear are balls" means 'All clear are balls' (Invalid for the basic diagram, conclusion doesn't follow)
Conclusion II: Some balls are clear" (Valid for the basic diagram, conclusion follows)
Statements: All pens are balls   All pens are clear

Basic Diagram

6) ***Ans: Both Conclusions I and II do not follow*** *(Neither Conclusion I nor II follows)*
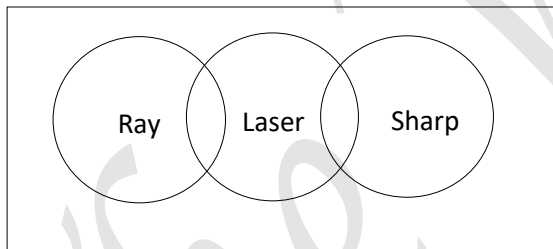Conclusion I: "Some sharp are rays" (Invalid for the basic diagram, conclusion doesn't follow)

Conclusion II: "Some rays are not sharp" (Valid for the basic diagram, **however,** conclusion is NEGATIVE. So, it requires to draw a NEW diagram with negated conclusion (All rays are sharp).
(Negation of 'Some rays are not sharp' is **'All rays are sharp'. It is a standard format).**
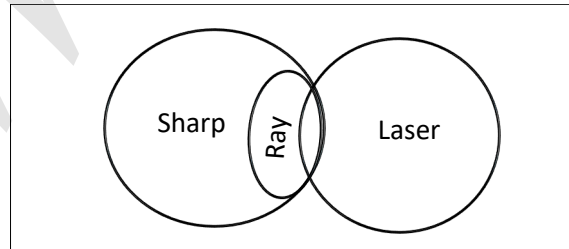New Diagram exists (New diagram **doesn't contradict** with the statements), therefore, negated conclusion is valid and the original conclusion (conclusion II) doesn't follow. Look at the YouTube Video for step by step process: https://youtu.be/og0QaHeKTew
Statements: Some rays are laser   Some lasers are sharp

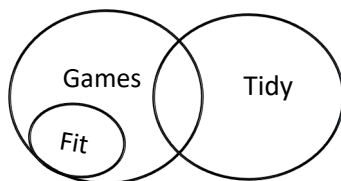**Basic Diagram**   **New Diagram**

7) ***Ans: Both Conclusions I and II do not follow*** *(Neither Conclusion I nor II follows).*
Conclusion I: "~~Most~~ Some tidy are fit" (Invalid for the basic diagram, doesn't follow)
Conclusion II: "No games are tidy" (Invalid for the basic diagram: A negative conclusion invalid for the basic diagram means it doesn't follow. NO NEED to NEGATE it in this case).
Statements: All fit are games   Some tidy are games
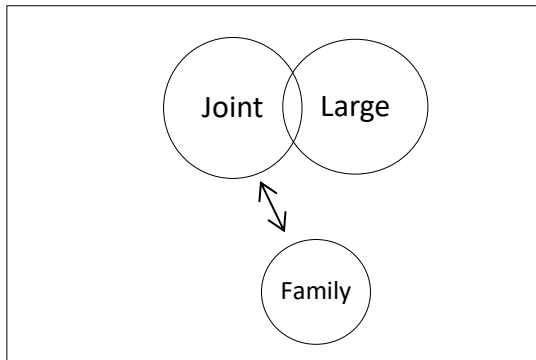
Basic Diagram

8) ***Ans: Only Conclusion II follows***

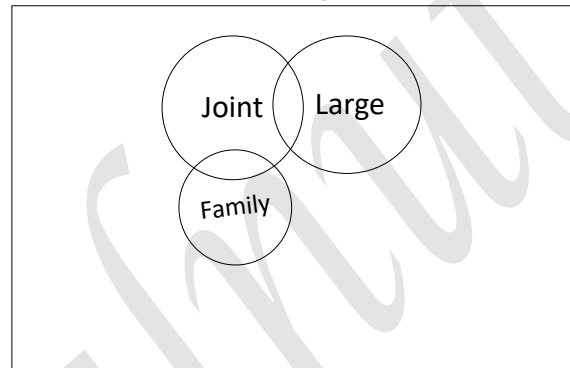Conclusion I: "Some families are large" (Invalid for the basic diagram, it doesn't follow)

Conclusion II: "No joint is family" (Valid for the basic diagram, **however,** conclusion is **negative**. So, it requires a NEW diagram with <u>negated</u> conclusion (Some joint is family). <u>New Diagram doesn't exist</u> <u>because it violates the statement condition 'No family is joint'.</u> Since the new diagram doesn't exist, ***original conclusion*** *(No joint is family)* **follows**.

Statements: No family is joint   Some joint is large

Basic Diagram	**New Diagram**

9) ***Ans: Either Conclusions I or II follows***

Conclusion I: "Some cars are fast" (Invalid for the basic diagram, it doesn't follow)
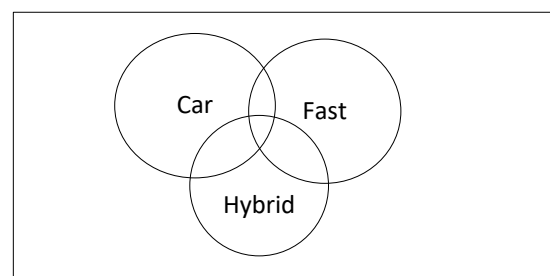
Conclusion II: "No cars are fast" (Valid for the basic diagram, **however,** conclusion is **negative**. So, it requires a NEW diagram with <u>negated</u> conclusion (Some cars are fast). New Diagram exists when we check with statements, therefore, conclusion II doesn't follow.

Statements: Some cars are hybrid   Some hybrids are fast

Basic Diagram	**New Diagram**
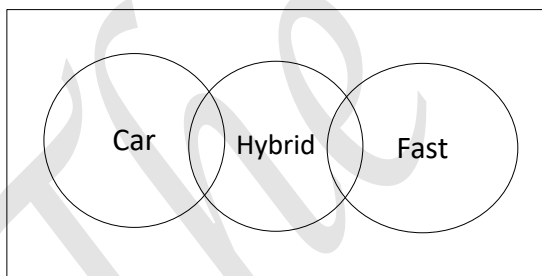
However, this is a special case where first conclusion and second conclusion are negated pairs ('Some cars are fast' **is the negation of** 'No cars are fast').

In this special circumstance **we may look at 3 conditions** to check it is **'either or type'.**

1) One of the given conclusions is the negation of the other (It is 'True' here; SOME and NO)
2) Both conclusions do not follow the statements (True)
3) Subject (first term: cars) of both conclusions are same and predicate (second term: fast) of both conclusions are same. (True)

   Look at the YouTube Video for detailed steps: https://youtu.be/usKyIpUn1PI

10) *Ans: Either Conclusions I or II follows*

Conclusion I: "No zygotes are clones" (Valid for the basic diagram, **however,** conclusion is **negative**. So, it requires a NEW diagram with <u>negated</u> conclusion(Some zygotes are clones). New Diagram exists when we check with statements, therefore, conclusion I doesn't follow. *(New diagram is drawn based on the negated conclusion 'Some zygotes are clones.' The New Diagram exists means, there is no statement says ZYGOTE cannot intersect with CLONE. Therefore, New Diagram exists)*

Conclusion II: "Some clones are zygotes" (Invalid for the basic diagram, it doesn't follow)

Statements:
All clones are genes
Some zygotes are genes
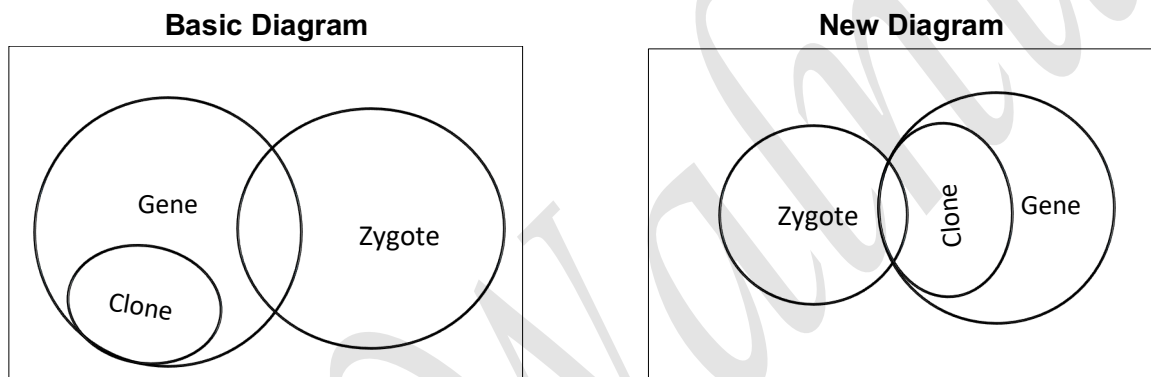
Basic Diagram	**New Diagram**

However, this is a special case where first conclusion and second conclusion are negated pairs (SOME CLONES ARE ZYGOTES is equivalent to SOME ZYGOTES ARE GENES and it is the negation of NO ZYGOTES ARE GENES**).** Ultimately, **one of the given conclusions** is the **negation of the other** conclusion.

In this SPECIAL CIRCUMSTANCE look at **the 3 conditions** to check it is **'either or type'.**
1) One of the given conclusions is the negation of the other (This case SOME and NO)
2) Both conclusions do not follow the statements
3) Subject (first term: Zygote) of Conclusion I is the predicate (second term) of conclusion II and predicate of conclusion I is the subject of conclusion II. (Subject and predicate of Conclusions I and II are interchanged).

Ultimately, if it is SOME and NO pair, if both terms are same for two conclusions (even if the subject is predicate and predicate is subject) then it is either or pair. **This is applicable only for SOME and NO pair**. YouTube for more details: https://youtu.be/usKyIpUn1PI

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11) ***Ans: Either Conclusions I or II follows***

Conclusion I: "Some mouse are not printers" (Valid for the basic diagram, **however,** conclusion is **negative**. So, it requires a NEW diagram with <u>negated</u> conclusion (All mouse are printers). New Diagram exists when we check with statements, therefore, conclusion I doesn't follow.

Conclusion II: "All mouse are printers" (Invalid for the basic diagram, conclusion doesn't follow)

Statements:

Some clicks are mouse

No disks are printers

Basic Diagram	**New Diagram**
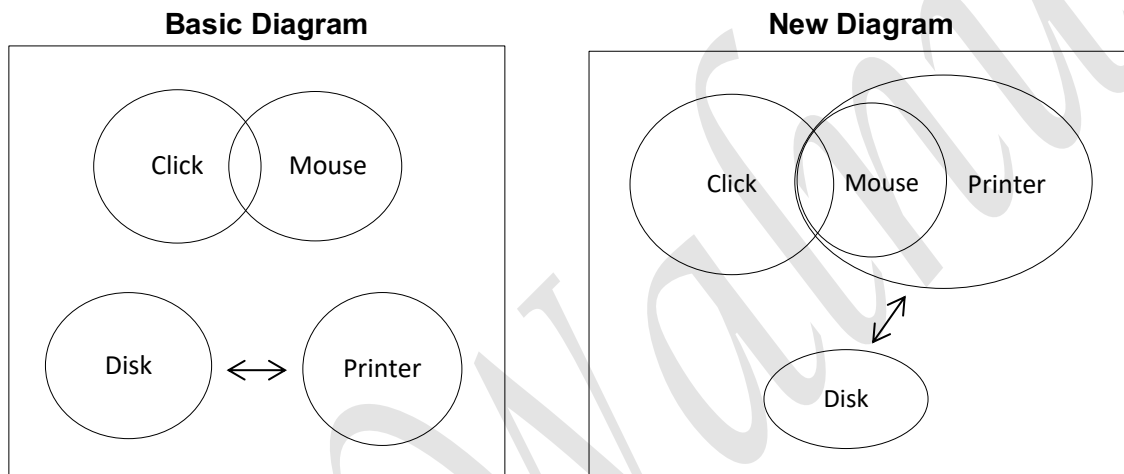
However, this is another special case where first conclusion and second conclusion are negated pairs (ALL MOLECULES ARE PROTONS' is the negation of SOME MOLECULES ARE NOT PROTONS**).**

In this special circumstance we may look at **3 conditions** to check it is **'either or type'**.

1) One of the conclusion is the negation of the other (This case SOME NOT and ALL)
2) Both conclusions do not follow the statements
3) Subject (first term: mouse) of both conclusions are same and predicate (second term: printer) of both conclusions are same. Look at the YouTube Video for more details: https://youtu.be/6vSuUt4l8xY