Evaluating Colour in Concept Diagrams: Study Materials

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✦

Training: Notation

This section contains the statements and diagrams presented to participants for the purposes of training. A training example can be seen here:

The solid arrow "guides" starts at Enchanter and ends on the circle that is completely inside Nisse. **Therefore:**
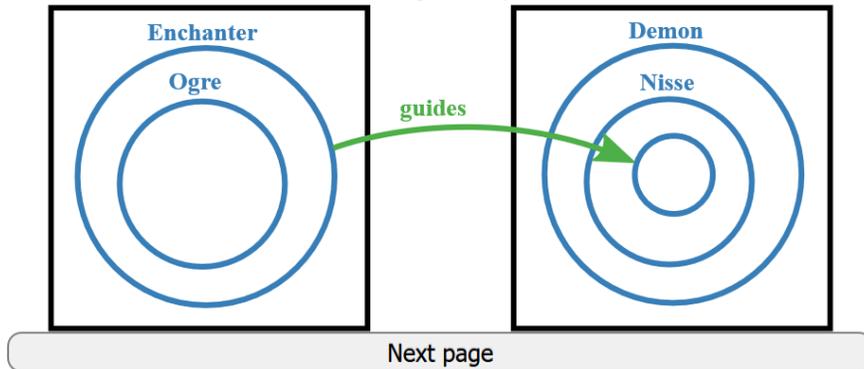
☑ Enchanters guide only Nisses

Since Ogre is completely inside Enchanter, the diagram also tells us that

☑ Ogres guide only Nisses.

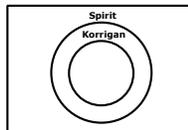Since Nisse is completely inside Demon, the diagram also tells us that
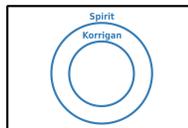
☑ Enchanters guide only Demons

Next page

Question t1

- **Text:** The circle Korrigan is completely inside the circle Spirit. The diagram tells us that
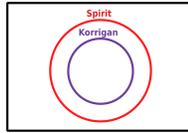
  - all Korrigans are Spirits.
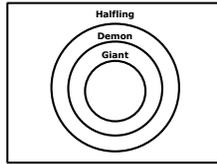
- **Monochrome:**

- **Dichrome:**
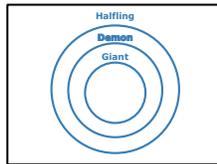
- **Polychrome:**

Question t1i

- **Text:** Giant is completely inside Demon. Demon is also completely inside Halfling. Therefore

    - all Giants are Demons
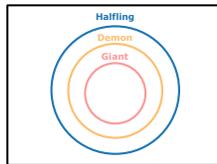   - all Demons are Halflings
    - all Giants are Halflings.

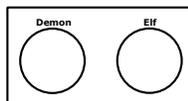- **Monochrome:**

- **Dichrome:**
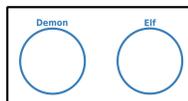

- **Polychrome:**

Question t2

- **Text:** The circle Demon is completely separate from the circle Elf. The diagram tells us that

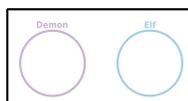   - no Demon is an Elf
    - no Elf is a Demon.

- **Monochrome:**

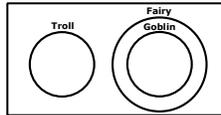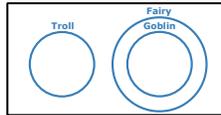
- **Dichrome:**

- **Polychrome:**

Question t2i

- **Text:** Troll is completely separate from Fairy. Goblin is completely inside Fairy. Therefore

    - no Troll is a Fairy
    - no Fairy is a Troll
    - every Goblin is a Fairy
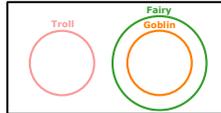   - no Goblin is a Troll
    - no Troll is a Goblin.

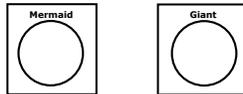- **Monochrome:**

- **Dichrome:**

- **Polychrome:**

Question t2mr

- **Text:** Mermaid and Giant are contained in different boxes, so we do **not** know which of the following is true

    - no Mermaid is a Giant
    - all Mermaids are Giants
    - all Giants are Mermaids
    - none of these relationships hold between Mermaids and Giants

- **Monochrome:**

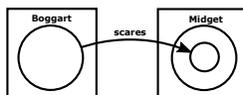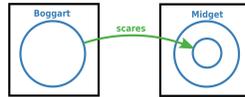- **Dichrome:**

- **Polychrome:**

Question t3

- **Text:** The solid arrow "scares" starts at Boggart and ends on the circle that is completely inside Midget. The diagram tells us that
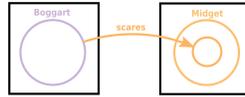
    - Boggarts scare only Midgets.

- **Monochrome:**

- **Dichrome:**

- **Polychrome:**

Question t3i

- **Text:** The solid arrow "guides" starts at Enchanter and ends on the circle that is completely inside Nisse. Therefore
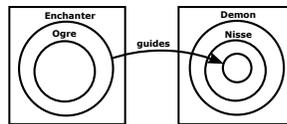
    - Enchanters guide only Nisses.

  Since Ogre is completely inside Enchanter, the diagram also tells us that
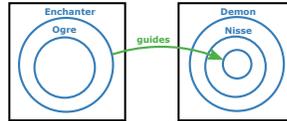
    - Ogres guide only Nisses.

  Since Nisse is completely inside Demon, the diagram also tells us that

    - Enchanters guide only Demons

- **Monochrome:**

- **Dichrome:**

- **Polychrome:**
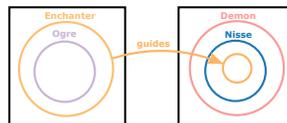
Question inAtt

- **Text:** Please look carefully at the diagram. By inspecting the diagram, select the two checkboxes where the statements are true.

Options and Answers:

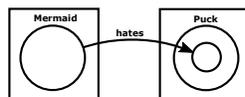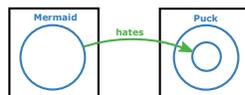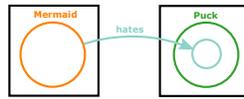| Option	Checkmark
The diagram contains three circles	✓
The diagram contains five circles	
The diagram contains two arrows	
The diagram contains one arrow	✓

- **Monochrome:**

- **Dichrome:**

- **Polychrome:**

Question t4

- **Text:** The dashed arrow "annoys" starts at Goblin and ends on the circle that is completely inside Fairy. The arrow is annotated with ≥ 1. The diagram tells us that

    - Goblins annoy at least one Fairy.

- **Monochrome:**
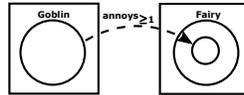
- **Dichrome:**
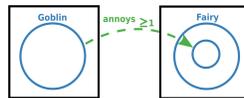
- **Polychrome:**
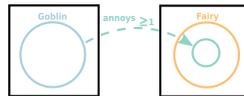
Question t4i

- **Text:** The dashed arrow "likes" starts at Giant and ends on the circle that is completely inside Halfling. Therefore

    - Giants like at least one Halfling.

  Since Ogre is inside Giant, the diagram also tells us that

    - Ogres like at least one Halfling.

  Since Halfling is inside Mermaid, the diagram also tells us that

    - Giants like at least one Mermaid.

- **Monochrome:**

- **Dichrome:**

- **Polychrome:**

Question t5

- **Text:** The solid arrow "likes -" starts at the box and ends at the circle inside Nisse. The diagram tells us that
  - only Nisses like things.

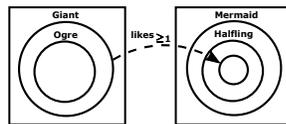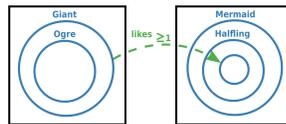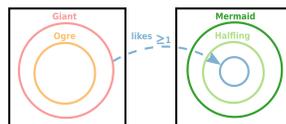- **Monochrome:**
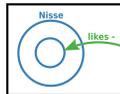
- **Dichrome:**

- **Polychrome:**

Question t5i

- **Text:** The solid arrow "tracks -" starts at the box and ends at the circle inside Goblin. Therefore
  - only Goblins track things.

  Since Goblin is inside Fairy, the diagram also tells us that all Goblins are Fairies, so:
  - only Fairies track things.

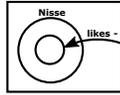- **Monochrome:**

- **Dichrome:**

- **Polychrome:**

Question t6

- **Text:** The solid arrow "chases" starts at the box and ends at the circle inside Puck. The diagram tells us that
  - things chase only Pucks.
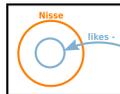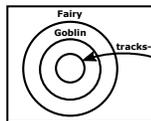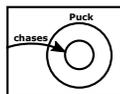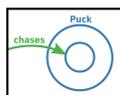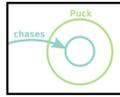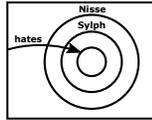
- **Monochrome:**

- **Dichrome:**

- **Polychrome:**

Question t6i

- **Text:** The solid arrow "hates" starts at the box and ends at the circle inside Sylph. Therefore

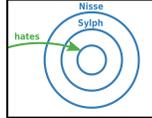 - things chase only Sylphs.

  Since Sylph is inside Nisse, the diagram also tells us that

  - things chase only Nisses.

- **Monochrome:**

- **Dichrome:**

- **Polychrome:**
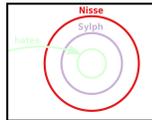
Text

This text appeared after training, before multi choice questions were presented:

You have completed the training phase. At this point, you can take a break but remember that 45 minutes is the maximum time allowed. The diagrams you will now see include more circles and arrows than those used for training. Each diagram will be associated with a set of checkboxes. You must tick all the checkboxes which correspond to statements that are necessarily true using ONLY the information given in the diagram shown on the screen. Remember to answer as accurately as possible and without undue delay. You will now be asked to answer nine questions. Click Next when you are ready to start answering the questions

Questions: Learning Effect

This section contains the statements and diagrams presented to participants for the purposes of reducing learning effect in the main study.

This text appeared on each learning effect question page:

Select the checkboxes next to all of the statements which are necessarily true. You should answer as accurately as possible and without undue delay.

An learning effect question can be seen here:

Select the checkboxes next to all of the statements which are necessarily true. You should answer as accurately as possible and without undue delay.

☐ All Korrigans are Demons ☐ Only Spirits guide things ☐ No Halfling is Spirit

☐ Korrigans hate only Goblins ☐ No Elf is Nissie ☐ Demons chase at least one Spirit

☐ Fairies track only Elves ☐ No Demon is Nisse ☐ Things scare only Halflings

☐ Halflings watch at least one Fairy
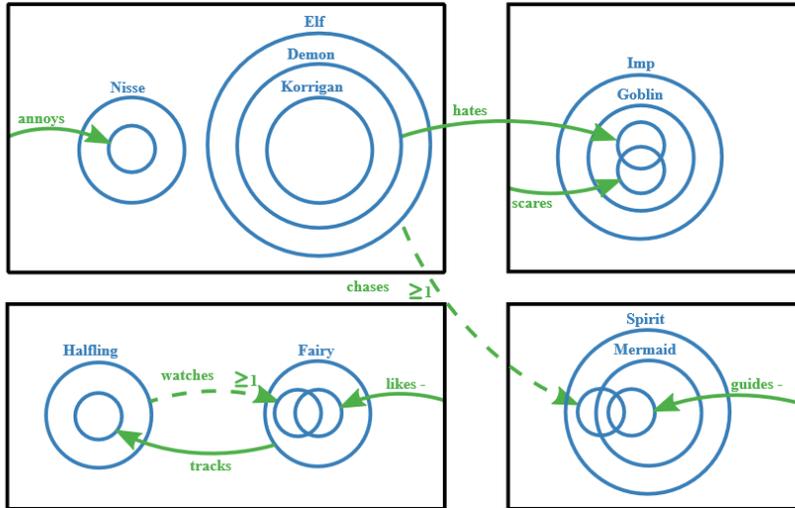
Next page

Question t7

- **Monochrome:**

- **Dichrome:**
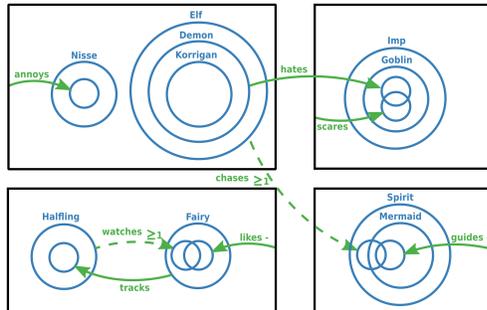
- **Polychrome:**
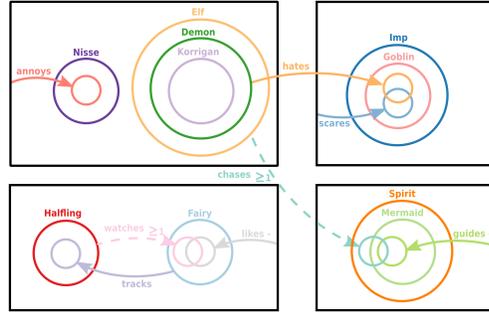
Options and Answers:

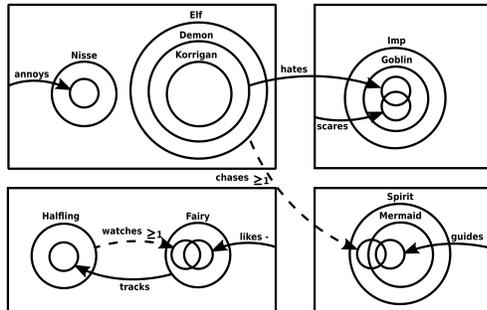| Option	Type	Checkmark
All Korrigans are Demons	Subset – direct	✓
Only Spirits guide things	Domain – indirect	✓
No Halfling is Spirit	Disjoint – direct	
Korrigans hate only Goblins	Only – indirect	✓
No Elf is Nissie	Disjoint – direct	✓
Demons chase at least one Spirit	Some – indirect	✓
Fairies track only Elves	Only – direct	
No Demon is Nisse	Disjoint – indirect	✓
Things scare only Halflings	Range – direct	
Halflings watch at least one Fairy	Some – direct	✓

Question t8

- **Monochrome:**
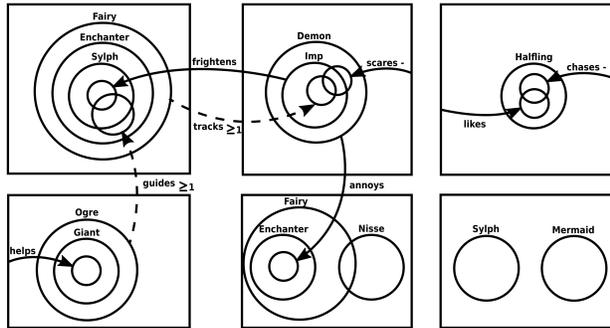
- **Dichrome:**
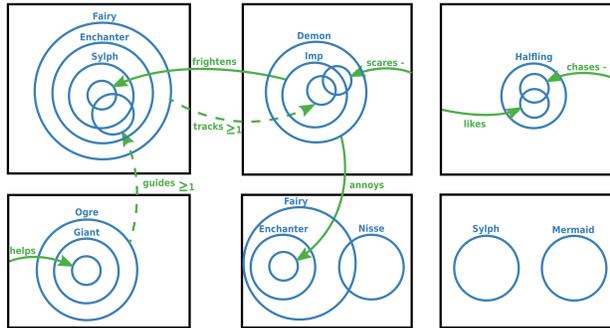
- **Polychrome:**
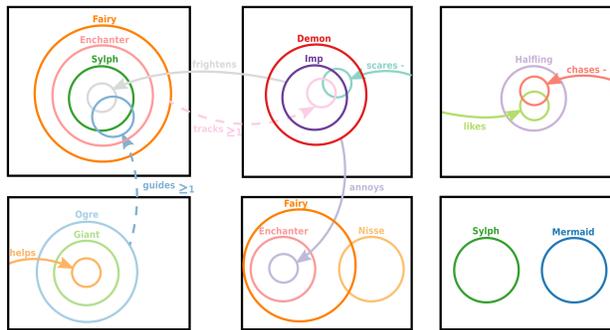
- **Options and Answers:**

Option	Type	Checkmark
Demons annoy only Fairies	Only – indirect	✓
Only Demons scare things	Domain – direct	✓
Things help only Ogres	Range – indirect	✓
All Giants are Fairies	Subset – direct	
Fairies track at least one Demon	Some – indirect	✓
Imps frighten only Sylphs	Only – direct	✓
Ogres guide at least one Nisse	Some – direct	
Only Mermaids chase things	Domain – direct	
All Sylphs are Fairies	Subset – indirect	✓
Things like only Halflings	Range – direct	✓

Main Study

This text appeared on each main study question page:

Select the checkboxes next to all of the statements which are necessarily true. You should answer as accurately as possible and without undue delay.

An example question can be seen here:

Select the checkboxes next to all of the statements which are necessarily true. You should answer as accurately as possible and without undue delay.
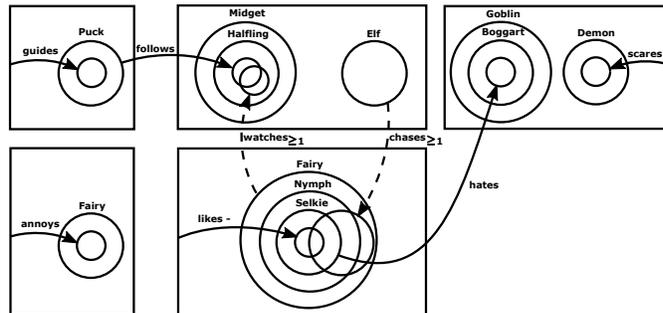
☐ Elves chase at least one Fairy ☐ All Selkies are Fairies ☐ Things guide only Elves
☐ Selkies hate only Goblins ☐ All Boggarts are Midgets ☐ No Halfling is an Elf
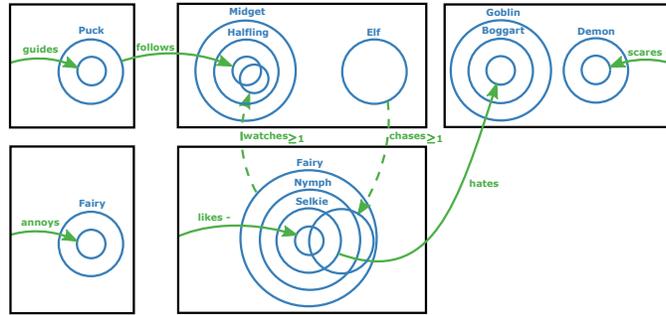☐ Only Demons scare things ☐ Pucks follow only Goblins ☐ Things annoy only Fairies
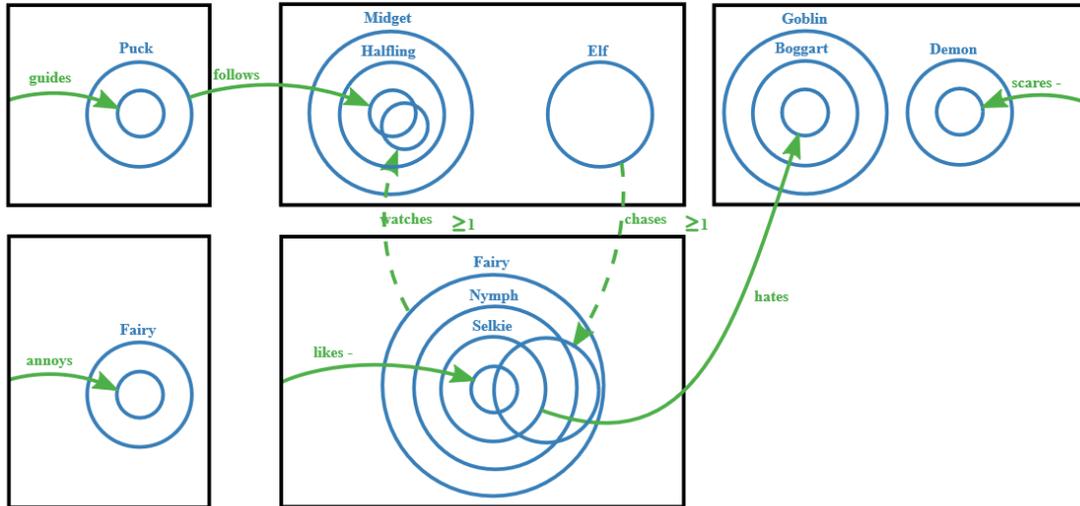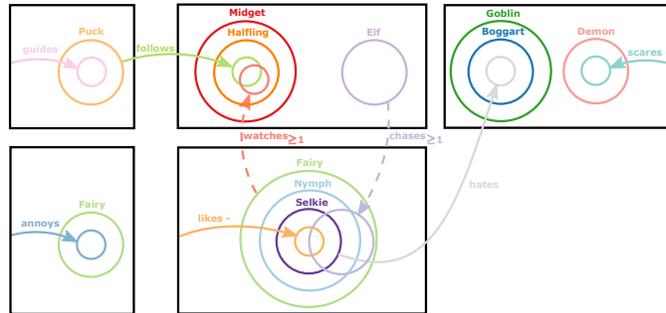

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Question m1

- **Monochrome:**

- **Dichrome:**

- **Polychrome:**

- **Options and Answers:**

Option	Type	Checkmark
Elves chase at least one Fairy	Some – direct	✓
All Selkies are Fairies	Subset – indirect	✓
Things guide only Elves	Range – direct	
Selkies hate only Goblins	Only – indirect	✓
All Boggarts are Midgets	Subset – direct	
No Halfling is an Elf	Disjoint – indirect	✓
Only Demons scare things	Domain – direct	✓
Pucks follow only Goblins	Only – direct	
Things annoy only Fairies	Range – direct	✓

Question m2

- **Monochrome:**
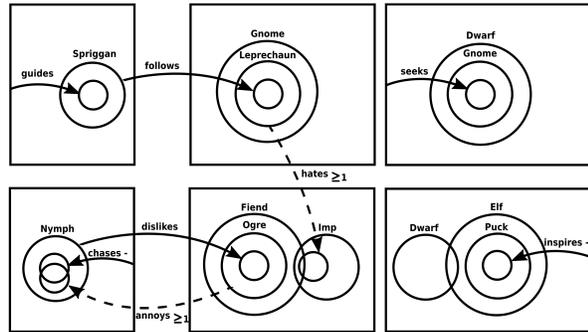
- **Dichrome:**
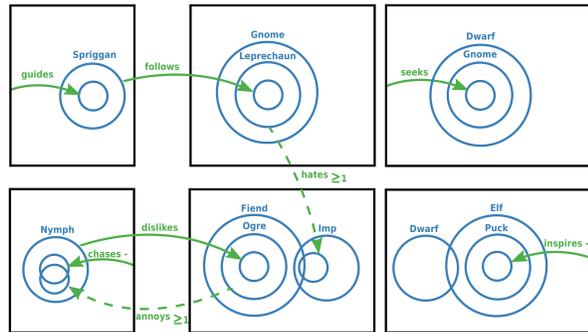
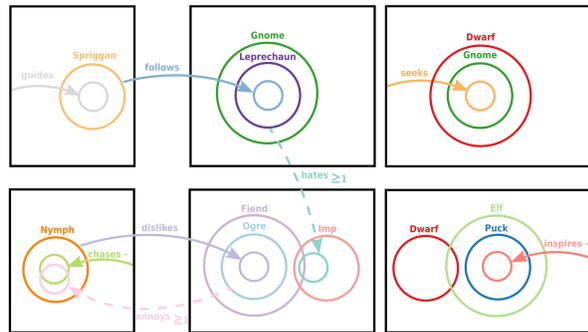- **Polychrome:**

- **Options and Answers:**

Option	Type	Checkmark
Things seek only Dwarfs	Range – indirect	✓
No Ogre is a Gnome	Disjoint – direct	
Spriggans follow only Gnomes	Only – indirect	✓
No Puck is a Dwarf	Disjoint – direct	✓
Leprechauns hate at least one Dwarf	Some – direct	
Ogres annoy at least one Nymph	Some – direct	✓
Only Elves inspire things	Domain – indirect	✓
No Ogre is a Nymph	Disjoint – direct	
Things seek only Gnomes	Range – direct	✓

Question m3

- **Monochrome:**
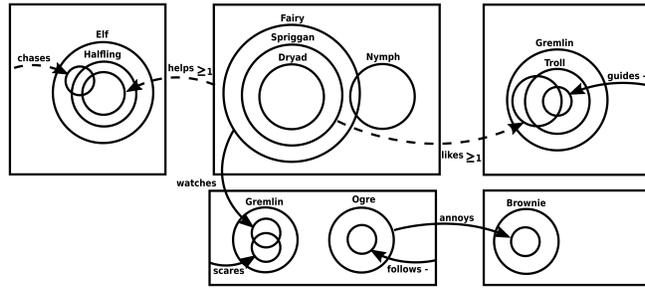
- **Dichrome:**
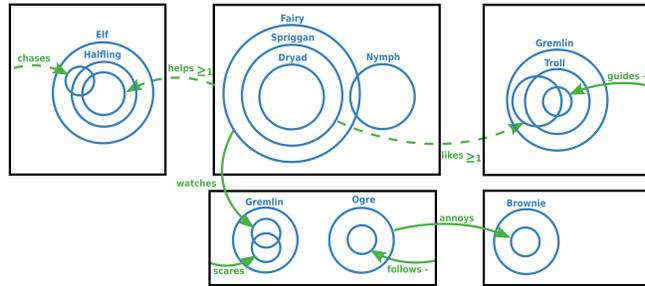
- **Polychrome:**
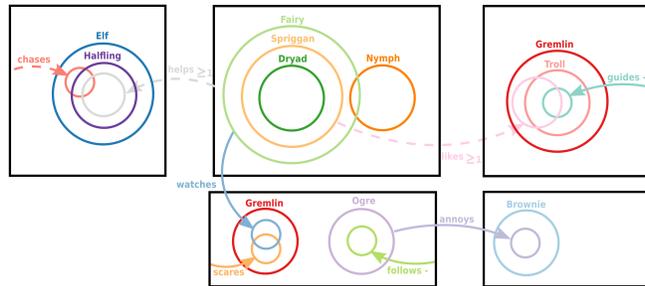
- **Options and Answers:**

Option	Type	Checkmark
All Halflings are Gremlins	Subset – direct	
Ogres annoy only Brownies	Only – direct	✓
Fairies watch only Halflings	Only – direct	
Only Gremlins guide things	Domain – indirect	✓
All Dryads are Fairies	Subset – indirect	✓
Only Ogres follow things	Domain – direct	✓
Ogres annoy only Gremlins	Only – direct	
All Spriggans are Fairies	Subset – direct	✓
Dryads like at least one Gremlin	Some – indirect	✓

Question m4

- **Monochrome:**
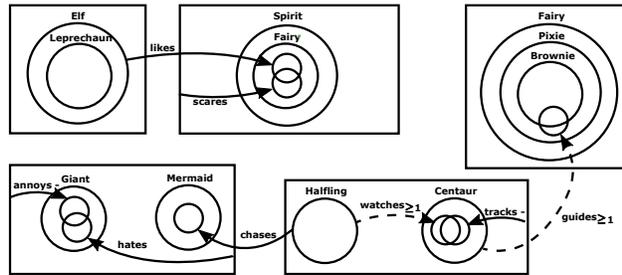
- **Dichrome:**
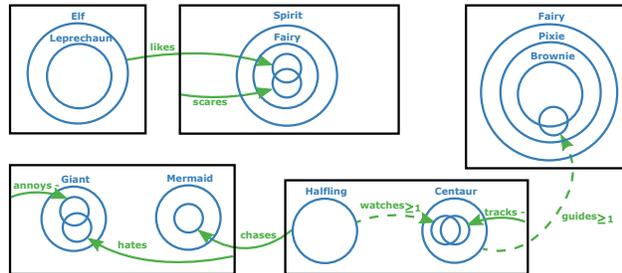
- **Polychrome:**

- **Options and Answers:**

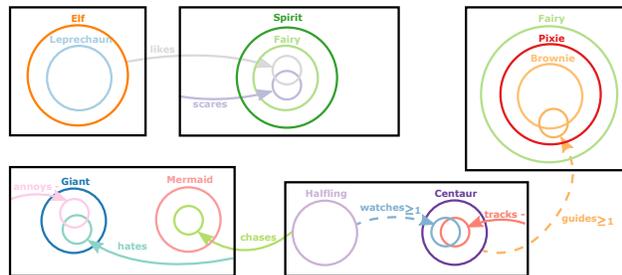| Option	Type	Checkmark
All Brownies are Fairies	Subset – indirect	✓
Only Centaurs track things	Domain – direct	✓
Things scare only Spirits	Range – indirect	✓
All Pixies are Giants	Subset – direct	
No Mermaid is a Giant	Disjoint – direct	✓
Only Mermaids annoy things	Domain – direct	
Centaurs guide at least one Fairy	Some – indirect	✓
All Fairies are Spirits	Subset – direct	✓
Halflings watch at least one Fairy	Some – direct	

Question m5

- **Monochrome:**
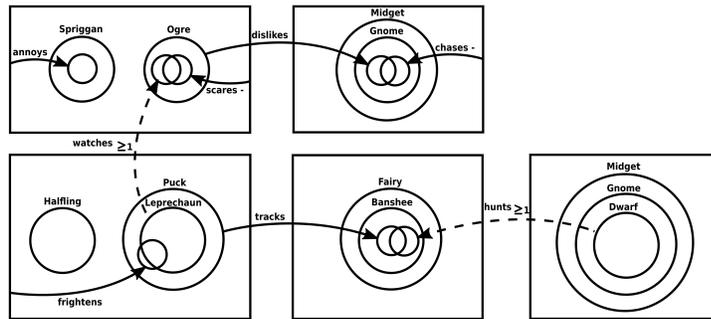
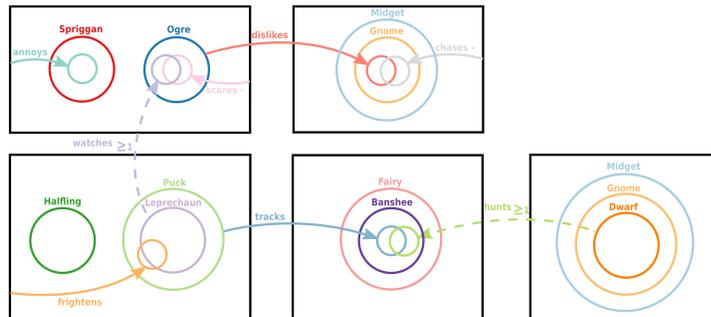- **Dichrome:**
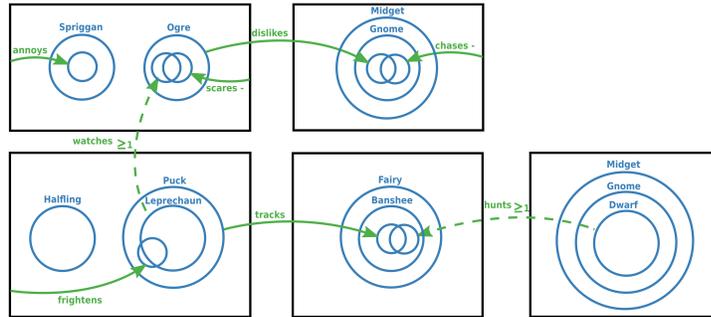
- **Polychrome:**

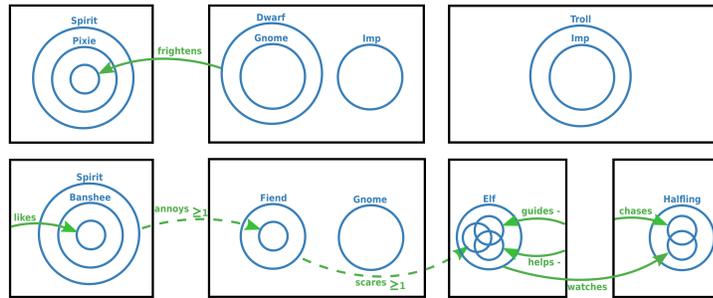- **Options and Answers:**

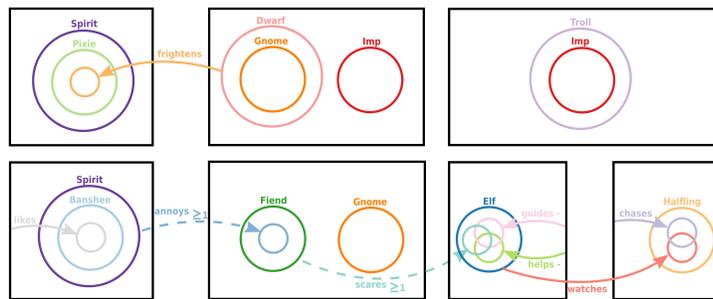| Option	Type	Checkmark
No Spriggan is a Fairy	Disjoint – direct	
Only Midgets chase things	Domain – indirect	✓
Ogres dislike only Gnomes	Only – direct	✓
Things annoy only Spriggans	Range – direct	✓
No Halfling is a Leprechaun	Disjoint – indirect	✓
Only Spriggans chase things	Domain – direct	
Leprechauns track only Banshees	Only – indirect	✓
Leprechauns watch at least one Ogre	Some – direct	✓
Only Fairies scare things	Domain – direct	

Question m6

- **Monochrome:**
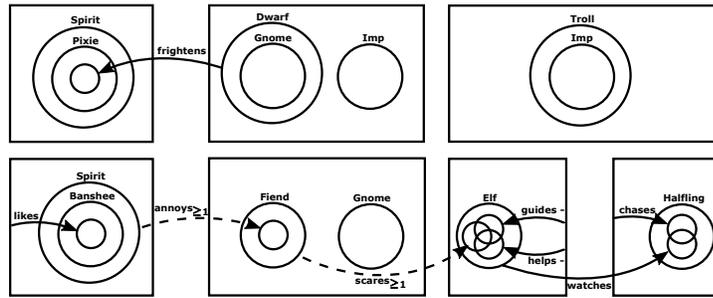
- **Dichrome:**

- **Polychrome:**

- **Options and Answers:**

| Option	Type	Checkmark
Elves watch only Halflings	Only – direct	✓
Things like only Pixies	Range – direct	
Banshees annoy at least one Fiend	Some – indirect	✓
No Gnome is a Fiend	Disjoint – direct	✓
Fiends scare at least one Troll	Some – direct	
Things like only Spirits	Range – indirect	✓
All Gnomes are Dwarf	Subset – direct	✓
No Imp is a Gnome	Disjoint – indirect	✓
Things chase only Imps	Range – direct	

Select the checkboxes next to the THREE statements which are necessarily true. You should answer as accurately as possible and without undue delay.
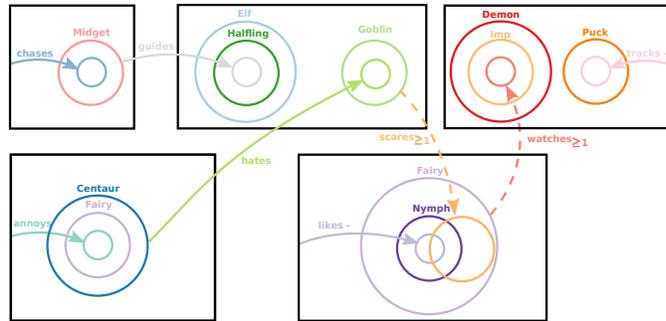
Question s1

- **Monochrome:**
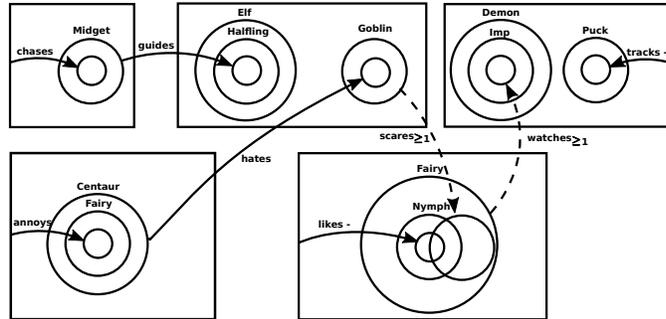
- **Dichrome:**
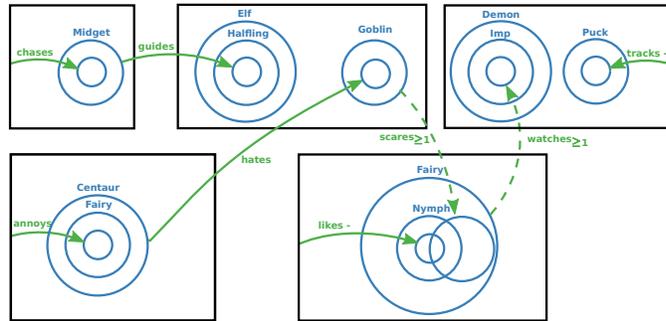
- **Polychrome:**

- **Options and Answers:**

Option	Checkmark
All circles are the same size	
The diagram contains five boxes	✓
All arrows are the same length	
The diagram contains dashed and solid arrows	✓
The diagram contains 76 circles	
The diagram contains 107 arrows	
The top-left boxes contains 27 circles	
Every box contains at least one circle	✓
All boxes are the same size	