Though analogy is often misleading, it is the least misleading thing we have.

Samuel Butler

Analogy cannot serve as proof.

Louis Pasteur
Analogy in communication promotes understanding.

Use of analogy in nature supports creative problem solving (mechanical inventions from biological analogy)

I can solve this problem in a way similar to how that problem was solved.
Working analogy problems requires
- Spelling out ideas fully
- Formulating precise relationships of facts
- Developing correspondences between ideas
- Comparing relationships for similarities and differences

These skills are central to all problem solving.
**Simple Analogy Example**

*Gills* are related to *fish* as *lungs* are related to *humans*.

Restate:
- *Gills* are used for breathing by *fish*.
- *Lungs* are used for breathing by *humans*.

(Where did “used for breathing” come from?)

Define a “relationship sentence”:

______ are used for breathing by ______.
The key issue in analogy problems is picking the proper relationship sentence.

*Carpenter* is to *saw* as *plumber* is to *wrench*.

- A ____ is a ____.
- A ____ cuts wood with a ____.
- A ____ uses a tool called a ____.
Stewardess is to airplane as waitress is to restaurant.

- A ____ is a(n) ____.
- A ____ works in a(n) ____.
- A ____ gives safety instructions in a(n) ____.
Analogy 3

Guitar is to *pick* as *fiddle* is to *bow*.

- A ____ is played with a ____.
- A ____ is plucked with a ____.
- A ____ is a ____.
Fence is to garden as bumper is to car.

- A ____ helps protect a ____.
- A ____ keeps trespassers out of a ____.
- A ____ surrounds a ____.
Analogy 5

20 is related to 10 as 50 is related to 40.

- ____ is larger than ____.
- ____ is ten more than ____.
- ____ is twice ____.
- ____ is one-half of ____.
50 is related to 48 as 67 is related to 64.

- ____ is two more than ____.
- ____ is larger than ____.
- ____ is smaller than ____.
Define the Relationships

*Mouth* is to *talk* as *hand* is to *grasp*.

6 is related to 2 as 21 is related to 7.

70 is related to 30 as 35 is related to 15.

*Arrive* is to *depart* as *find* is to *lose*.

*Roots* are to *plant* as *mouth* is to *animal*.

*Peacock* is to *bird* as *tuxedo* is to *suit*.

50 is related to 20 as 90 is related to 60.
Now we look at the standard form of analogy problems on tests.

- One pair is given, you pick another pair that has the same relationship.
- It helps if you can define a relationship sentence.
Analogy Problem 1

"Thermometer is to temperature as ____ is to ____.

a) telescope : astronomy
b) clock : minutes
c) scale : weight
d) microscope: biologist
Analogy Problem 2

*Horse is to animal as ____ is to ____.*

a) cow : milk  
b) farm : pig  
c) oak : wood  
d) saddle : stallion
2 is to 6 as ____ is to ____.

a) 6 : 2
b) 12 : 36
c) 3 : 1
d) 12 : 60
Analogy Problem 4

*Pack* is to *wolves* as ____ is to ____.

a) alphabet : letters
b) wheel : spokes
c) garage : cars
d) aquarium : fish
e) murder : crows
Analogy Problem 5

Same idea, just a different format.

_____ is to dollar as year is to _____.

a) money, calendar
b) penny, century
c) dime, month
d) savings, century
Analogy Problem 6

Try each choice. If the relationships are different, the answer is wrong. If the relationships are unclear, then hold the answer to reconsider.

____ is to cave as car is to ____.

a) Modern , primitive
b) Stone , steel
c) Primitive , modern
d) Apartment house , horse
### Some Common Types of Analogies

#### Contrasts

negligence is to careful as bravery is to cowardice

#### Part to whole

keyboard is to computer as trunk is to car

#### Part to part

keyboard is to mouse as trunk is to hood

#### Activity to result

heat is to warmth as rain is to flooding
Some Common Types of Analogies

Individual to object

docotor is to stethoscope as painter is to brush

Measure

clock is to time as decibel is to sound

Degree of difference/similarity

cool is to frozen as breeze is to gale

Use

pencil is to write as scissors are to cut