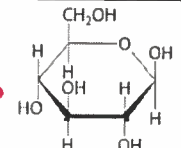
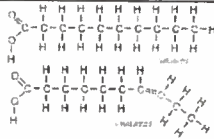
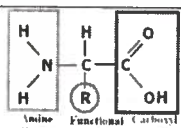
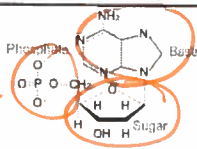



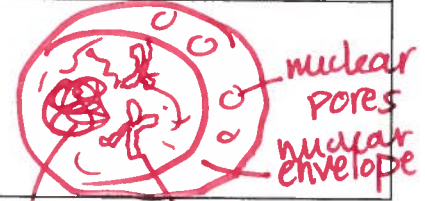


Station 1 – Biomolecules

Biomolecule	Function	Monomer	Picture	What is unique to each molecule?
Carbohydrate	Quick energy	mono-saccharide		(CHO) - ring shape
Lipid	Long term energy - membrane structure	Fatty Acid		- chain of Carbons (CHO)
Protein	- Structure - membrane - Enzymes	Amino Acid		(CHON) - R group (20)
Nucleic Acid	Stores genetic code	Nucleotide		(CHONP) - sugar - phosphate - base

Station 2 – Organelles

Organelle	Function	Picture
Mitochondria	- ATP production - Cellular Respiration - breaks ↓ glucose → ATP	
Chloroplast	- Photosynthesis - $CO_2 + H_2O + \text{light} \rightarrow C_6H_{12}O_6 + O_2$	
Ribosomes	- Protein Synthesis - translation	
Nucleus	- contains DNA - Eukaryotes only	

nuclear pores  
nuclear envelope  
Nucleolus DNA

### Station 3 – Cell Transport

- Active Transport involves molecules moving from LOW → HIGH concentration.
- Passive Transport involves molecules moving from HIGH → LOW concentration.
- Osmosis and Diffusion are both types of Passive Transport. Explain the difference between the two.  
Osmosis = movement of H<sub>2</sub>O; Diffusion = movement of molecules
- A cell placed in a Hypertonic environment will (circle one) Shrink / Swell because there is more solute outside of the cell, and therefore more water (circle one) IN / OUT OF the cell. Water moves from High → Low, so water will move (circle one) INTO / OUT OF the cell.
- What is necessary in order for Active transport to occur? ATP/energy

### Station 4 – Prokaryotes vs Eukaryotes

- List the cell parts that ALL cells have: DNA, (plasma) Cell membrane, ribosomes, cytoplasm
- Circle the types of cells that contain a Cell Wall → Animal cells Plant Cells Bacterial Cells
- Which type of cell does not have any membrane bound organelles? → Prokaryotic OR Eukaryotic
- What are 3 major differences between prokaryotes and eukaryotes?  
presence of memb.-bound organelles (Nucleus), size, complexity

### Station 5 – Ecology

- As you go up each trophic level of an ecology pyramid, What is lost to the environment? Heat
- What percent of the energy from one trophic levels actually gets transferred to the next? 10 % (hint: 10,000 units are available in the bottom level and 1,000 units are available in the 2<sup>nd</sup> level)
- Which trophic level contains the most organisms? → bottom OR top
- Which trophic level would contain the most amount of toxins? → bottom OR (top)
- Look at the food web at station 5. Each organism has one or two numbers next to it.
  - What does the 1 represent? primary producer (1<sup>o</sup>p)
  - What does the 2 represent? Primary Consumers (1<sup>o</sup>c)
  - What does the 3 Represent? Secondary consumer (2<sup>o</sup>)
  - What does the 4 Represent? tertiary consumer (3<sup>o</sup>)
- What does each arrow in a food web represent? flow of energy
- If Frogs disappeared, what would happen to the dragonflies? their #s would increase
- Complete the Chart

Mutualism	Commensalism	Parasitism
😊 😊	😊 😐	😊 😞
<u>both benefit</u>	One organism benefits One organism is unaffected	<u>one benefits other harmed</u>

**Station 6 – DNA**

1. DNA is in the shape of a double helix
2. Thymine (T) pairs with Adenine (A)
3. Guanine (G) pairs with Cytosine (C)
4. What type of bond holds the nitrogen bases together? Hydrogen
5. What are the three parts of a nucleotide?
  - a. Sugar
  - b. Nitrogen Base
  - c. Phosphate group
6. Which of the following describes the semi-conservative nature of a newly replicated DNA strand?
  - a.  One old strand, one new strand
  - b.  Two new strands
  - c.  Two old strands

**Station 7 – Protein synthesis**

1. What is the central dogma of biology? DNA → mRNA → Protein
2. What do the two arrows above represent? transcription and translation
3. Where does transcription occur? Nucleus
4. What is the product of transcription? mRNA
5. Where does translation occur? Cytoplasm (@ Ribosome)
6. Proteins are made up of Amino Acids
7. Complete the chart below by using the codon chart at station 7
- 8.

DNA sequence	Complimentary mRNA sequence	Amino Acid sequence
ATT GCA TCA	<u>UAA CGU AGU</u>	<u>stop!-</u>
<u>TAC CGA ATC</u>	AUG GCU UAG	<u>Met - Ala - Stop</u>
<u>TAC ACC AAA</u> <u>(AAG)</u>	<u>AUG UGG UUU</u> <u>(UUC)</u>	Met – Trp - Phe

### Station 8 – Genetic Combinations

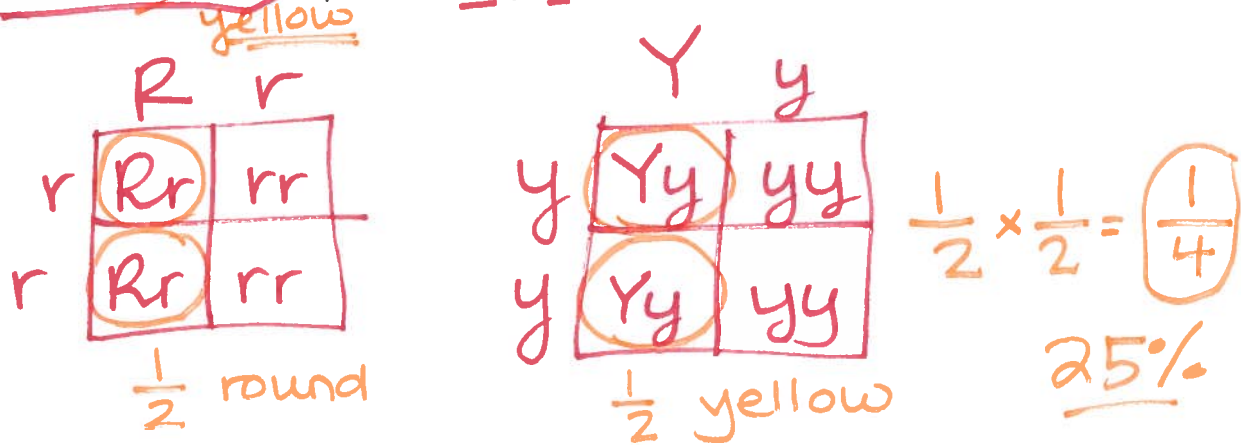
1. Describe the difference between Genotype and Phenotype (example → genotype: Rr ; phenotype: Round)

Genotype is your genetic makeup / phenotype is how you look.  
(the expression of your genes)

2. Circle the homozygous genotypes → RR Rr rr YY Yy yy

3. Circle the heterozygous genotypes → RR Rr rr YY Yy yy

4. Using the examples given at station 7 (two options for how to solve), determine what percent of offspring would be Round and Smooth if the parents are RrYy X rryy.



### Station 9 – Meiosis vs Mitosis

1. What is the major difference between Meiosis and Mitosis? (different) Meiosis produce  
Meiosis produces haploid gametes / identical cells

2. Complete the chart below: (use the terms haploid (n) and diploid (2n) and draw pictures)

	Mitosis	Meiosis
Start	$2n$ diploid	$2n$ diploid
End	$2n$ diploid	$n$ haploid

3. Describe what happens during each part of the cell cycle:

G1 → Growth

S → DNA replication

G2 → Growth; Checkpoint

Mitosis → nuclear division

Cytokinesis → Separation of cytoplasm

4. If a cell is unable to go into G0 (rest), and continuously goes through the cell cycle, what disease will occur?

CANCER