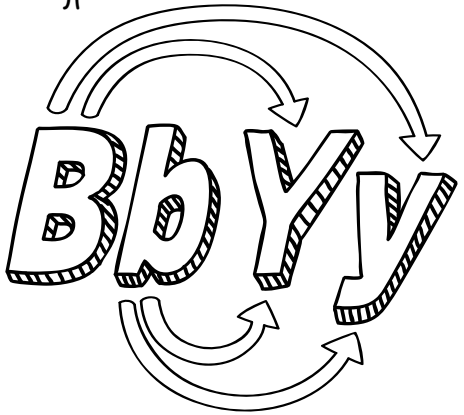
Dihybrid Crosses

What are these?

Dihybrid crosses are like _____ squares, except that they look at ___ traits instead of one. They are used to work out the _____ of the different offspring genotypes and _____ for each trait. The diagram contains _____ squares of results - we must take ____ when filling it in!

Working out parent gamete alleles!

We can use the FOIL method to work out parent gamete alleles from their genotypes. Color-code the arrows & words to explain this method!



FOIL stands for:

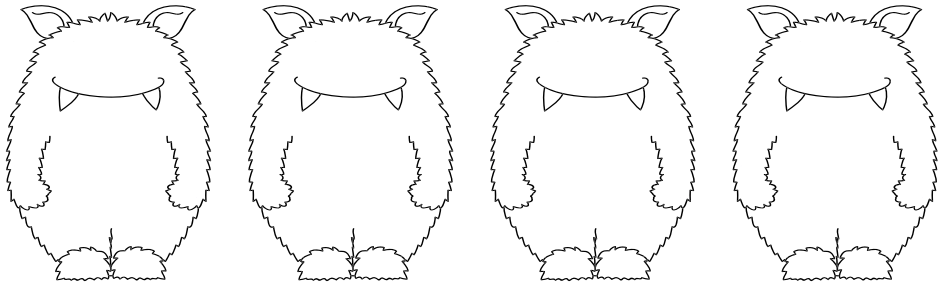
- First →
- Outer →
- Inner →
- Last →

Monster phenotypes!

The allele for three eyes (T) are dominant over the allele for one eye.

The allele for blue fur (B) is dominant over the allele for orange fur.

Use the genotypes to draw in the correct number of eyes for each monster and then color-in the fur blue or orange!



TtBb | ttbb | TTbb | ttBb

PRACTICE: Work out the gamete alleles for each parent.

DdLL =

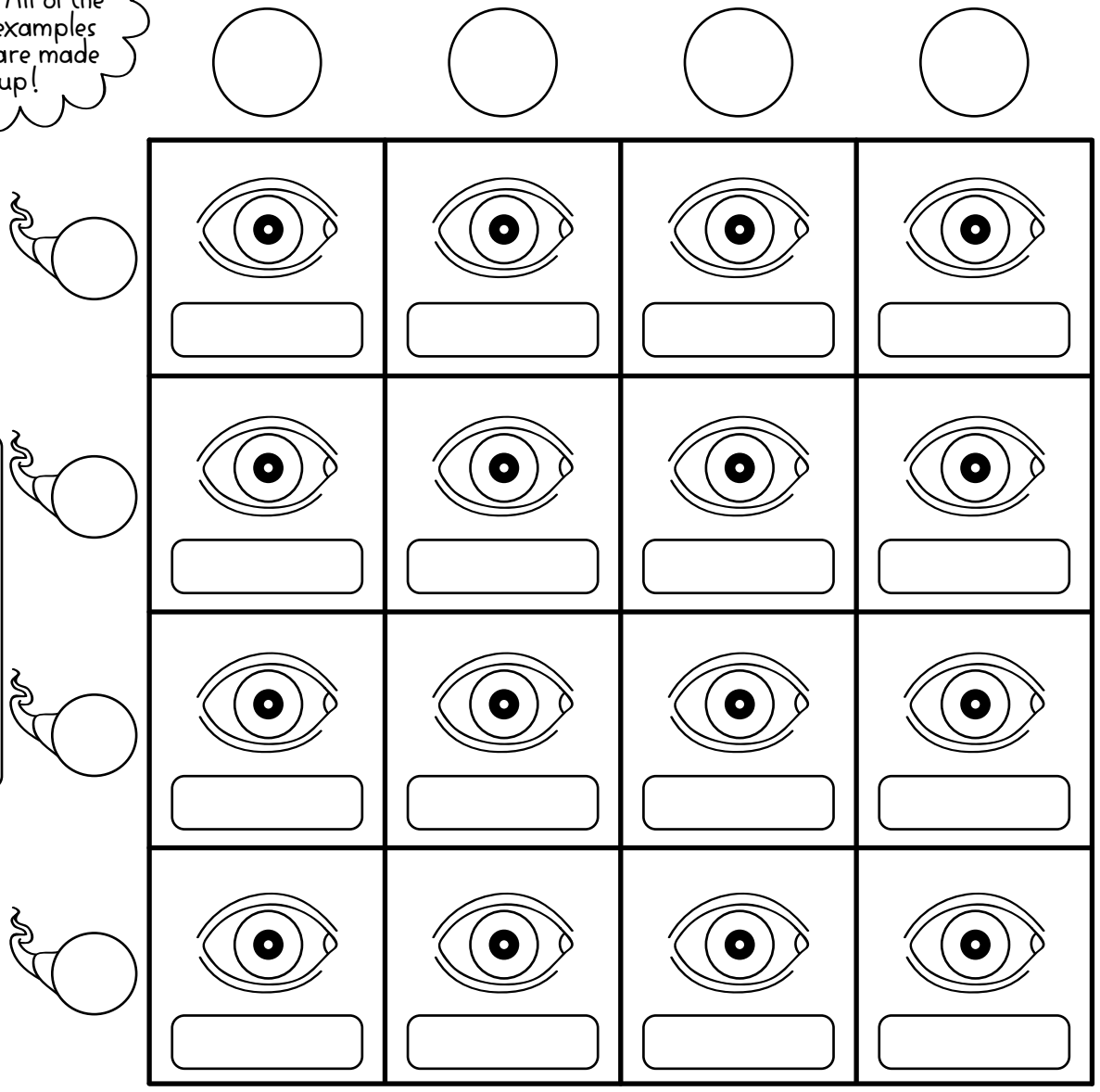
FfRr =

Challenge - here you will need to work backwards! Use the phenotype to work out ALL possible genotypes for each monster.

*All of the examples are made up!

Parent 1 gametes

Parent 2 gametes



Practice problem – EYES!

The allele for brown eyes (B) is dominant over the allele for blue eyes. The allele for long eyelashes (L) is dominant over the allele for short eyelashes.

Parent 1 is heterozygous for eye color and for eyelashes length. Parent 2 is also heterozygous for both traits.

Work out the possible offspring genotypes and phenotypes and give the expected probability of each phenotype.

STEP 1: Work out the parent _____ & the alleles in each _____.

Parent 1 genotype: ☐

Parent 1 gametes: ○ ○ ○ ○

Parent 2 genotype: ☐

Parent 2 gametes: 

STEP 2: Write the _____ gametes along the top and ____ of the cross.

STEP 3: Work out offspring _____ by reading across and ____.

STEP 4: Work out the _____ for each genotype. Show this by coloring in the irises and adding _____.

STEP 5: Work out the _____ of each offspring phenotype.

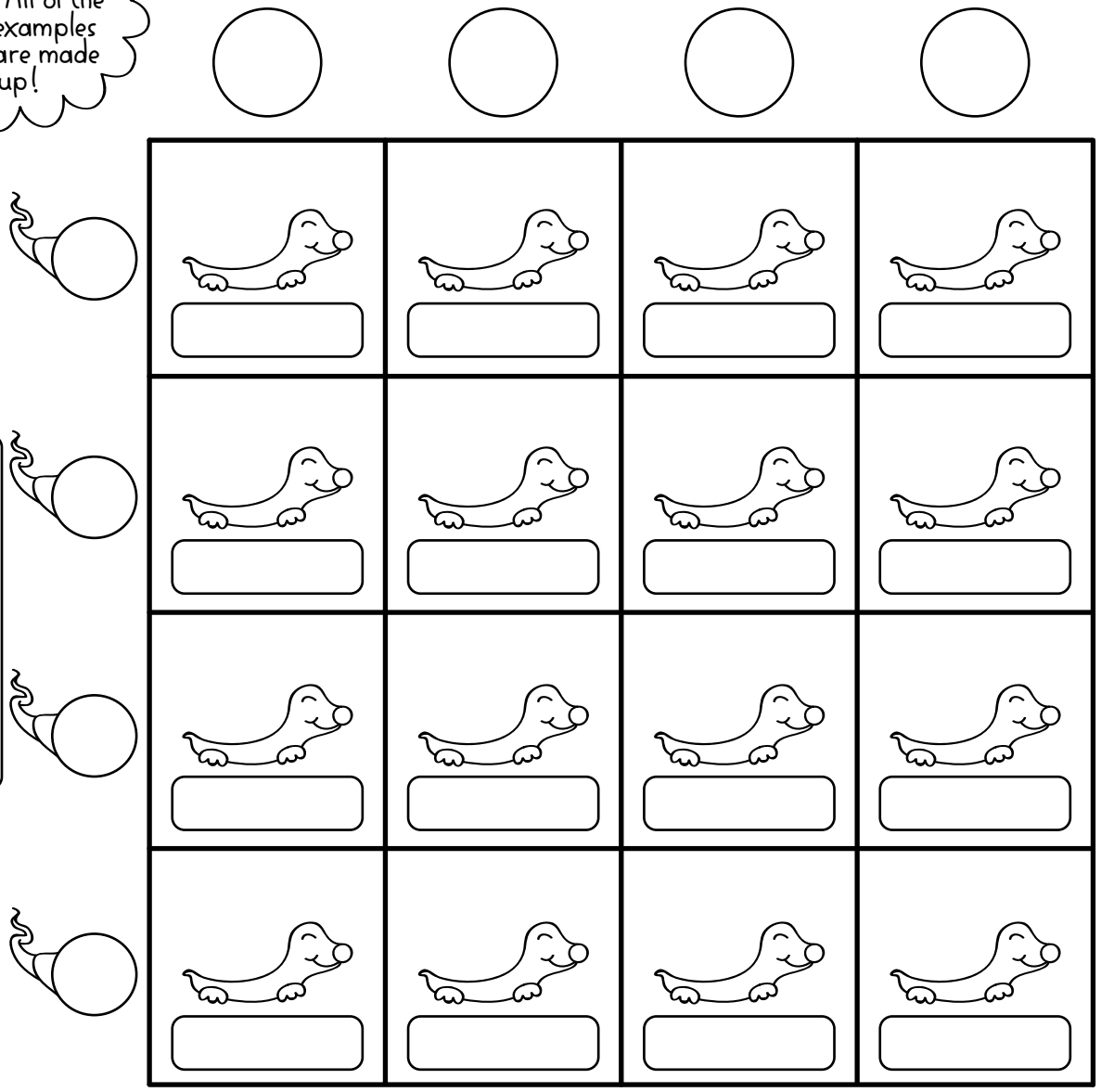
Brown eyes & long eyelashes = __/16 Blue eyes & long eyelashes = __/16

Brown eyes & short eyelashes = __/16 Blue eyes & short eyelashes = __/16

*All of the examples are made up!

Parent 1 gametes

Parent 2 gametes



Practice problem – HEDGEHOGS!

The allele for mega spikes (M) is dominant over the allele for normal spikes. The allele for a red nose (R) is dominant over the allele for a yellow nose.

Parent 1 is homozygous recessive for spikes and heterozygous for nose color. Parent 2 is heterozygous for spikes and homozygous dominant for nose color.

Work out the possible offspring genotypes and phenotypes and give the expected probability of each phenotype.

STEP 1: Work out the _____ & the alleles in each _____.

Parent 1 genotype: ☐

Parent 1 gametes: ○ ○ ○ ○

Parent 2 genotype: ☐

Parent 2 gametes: 

STEP 2: Write the _____ gametes along the top and ____ of the cross.

STEP 3: Work out offspring _____ by reading across and ____.

STEP 4: Work out the _____ for each genotype. Show this by drawing the _____ & coloring in the ____.

STEP 5: Work out the _____ of each offspring phenotype.

Mega spikes & red nose = __/16

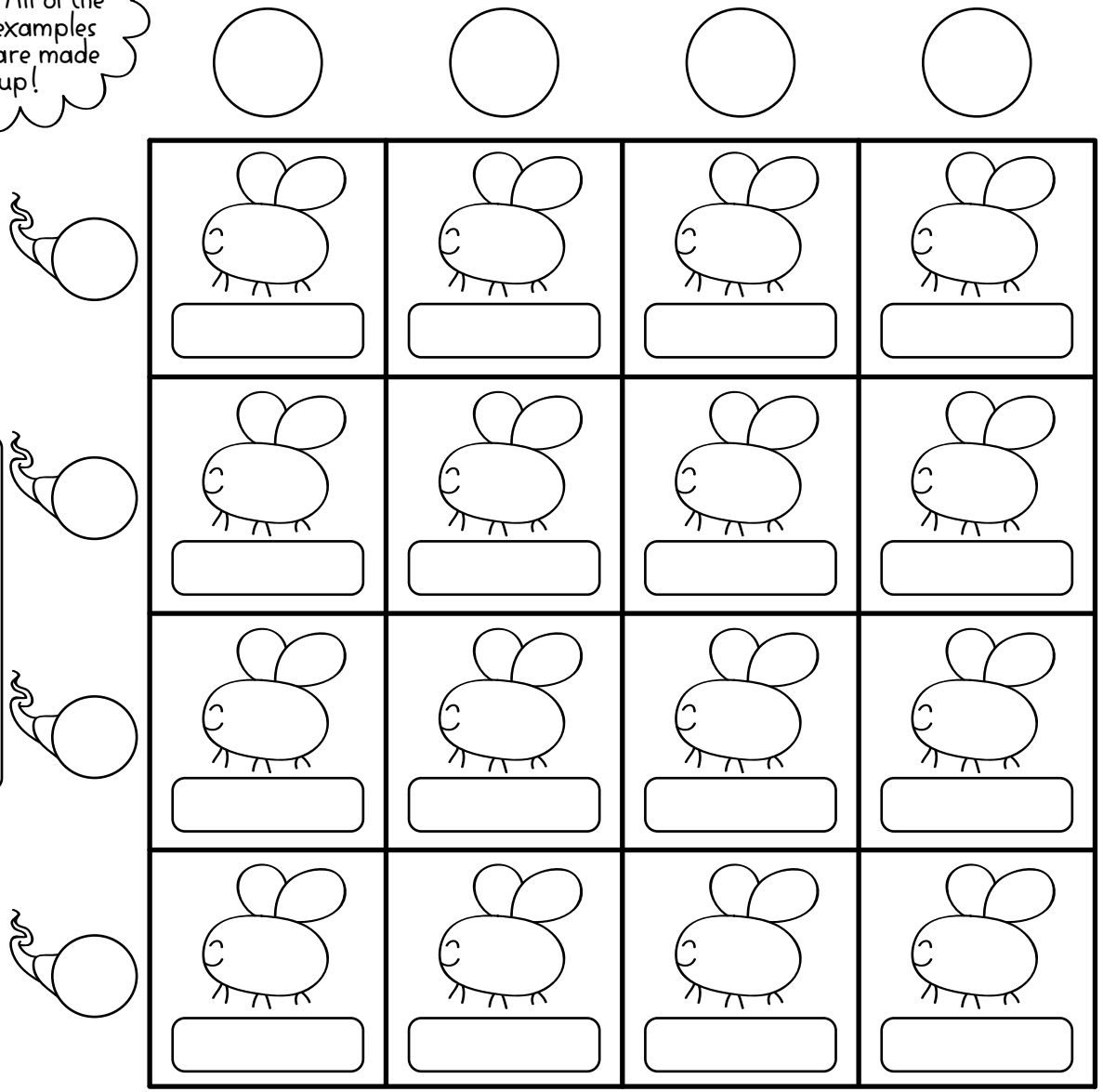
Normal spikes & red nose = __/16

Mega spikes & yellow nose = __/16

Normal spikes & yellow nose = __/16

*All of the examples are made up!

Parent 1 gametes



Parent 2 gametes

Practice problem – BEES!

The allele for two black stripes (T) is dominant over the allele for one stripe. The allele for curly antennae (C) is dominant over the allele for straight antennae.

Parent 1 is heterozygous for both traits. Parent 2 is heterozygous for number of stripes and homozygous recessive for antennae shape.

Work out the possible offspring genotypes and phenotypes and give the expected probability of each phenotype.

STEP 1: Work out the _____ & the alleles in each _____.

Parent 1 genotype:

Parent 1 gametes:

Parent 2 genotype:

Parent 2 gametes:

STEP 2: Write the _____ gametes along the top and ____ of the cross.

STEP 3: Work out offspring _____ by reading across and ____.

STEP 4: Work out the _____ for each genotype. Show this by drawing the _____ and adding stripe(s).

STEP 5: Work out the _____ of each offspring phenotype.

Two stripes and curly antennae = __/16

One stripe and curly antennae = __/16

Two stripes and straight antennae = __/16

One stripe and straight antennae= __/16