Name Key

Genetics: Multiple Allele Traits

Blood Type is controlled by 3 alleles: A, B, O. A & B are codominant, O is recessive.

1. a) What are the two genotypes possible for a person who as A blood? AA, Ao
   b) What genotype does a person with AB blood have? AB
   c) What genotype does a person with O blood have? oo
   d) What are the two genotypes possible for a person who as B blood? BB, Bo

2. A man with type AB blood is married to a woman also with type AB blood. What blood types will their children have and in what proportion?
25% Type A, 50% Type AB, 25% Type B

	A	B
A	AA	AB
B	AB	BB

3. A man has type B blood (genotype BB) is married to a woman with type O blood. What blood type will all their children have? B What is the genotype of the children? Bo

	B	B
o	Bo	Bo
o	Bo	Bo

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4. A woman with type A blood (genotype AO) is married to a type B person (genotype BO). What proportion of their children will have: A blood? ¼ B blood? ¼ O blood ¼

	A	o
B	AB	Bo
o	Ao	oo

5. A woman with type A blood is claiming that a man with type AB blood is the father of her child who is also type AB. Could this man be the father of the child? → yes Show the possible crosses; remember that the woman can have AA or AO genotypes.

	A	A
A	AA	AA
B	AB	AB

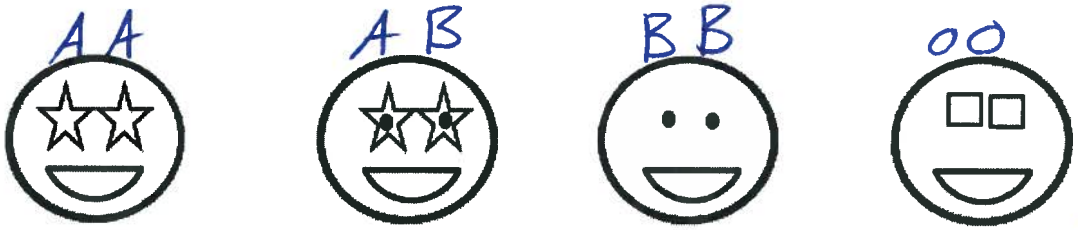
	A	o
A	AA	Ao
B	AB	Bo

6. A man with type AB blood is married to a woman with type O blood. They have two natural children and one adopted child. Jane has type A blood, Bobby has type B blood, and Grace has type O blood. Which child was adopted? Grace

	A	B
o	Ao	Bo
o	Ao	Bo

Smileys Genetics

In smileys, the shape of the eye is controlled by multiple alleles, much like blood types. The smileys pictured show the four possible phenotypes. It is known that the star and dot eyes are codominant and the square eyes is a recessive trait. Assign genotypes to each of the smileys pictured. (Hint: Use blood type genotypes to help you)



7. If a star-eyed smiley (homozygous) is crossed with a dot-eyed smiley (also homozygous) what will all of their offspring look like? all star-dot eyes

	A	A
B	AB	AB
B	AB	AB

8. If the pair in the cross about were both heterozygous, what will their offspring look like and in what proportion? ¼ star, ¼ star dot, ¼ dot, ¼ square

	A	o
B	AB	Bo
o	Ao	oo

9. If a starry-dot eyed smiley is crossed with a square eyed smiley, what type of eyes can their children have and in what proportion.
½ star ½ dot

10. If two starry-dot eyes smileys are crossed, what type of eyes can their children have and in what proportion?

	A	B
A	AA	AB
B	AB	BB

¼ star
½ star-dot
¼ dot

	A	B
o	Ao	Bo
o	Ao	Bo