Name _____ Date _____

Guide to the Lost Children

Fill in the table below with the possible allele combination(s) for each person. This will help you to complete Student Sheet 68.2.

Type A	= AA or AO	(A is dominant over O)
Type B	= *BB* or *BO*	(B is dominant over O)
Type AB	= *AB*	(A and B are co-dominant)
Type O	= *OO*	(O is recessive)
Rh+	= Rh^+Rh^+ or Rh^+Rh^-	(Rh^+ is dominant)
Rh-	= Rh^-Rh^-	(Rh^- is recessive)

Table 1: Parents

	Blood Type and Possible Alleles	Rh Factor and Possible Alleles
Belinda	A _____	Rh^+ _____
John	O _____	Rh^+ _____
Mai	AB _____	Rh^- _____
Paul	B _____	Rh^- _____

Table 2: Children

	Blood Type and Possible Alleles	Rh Factor and Possible Alleles
Girl 1	AB _____	Rh^+ _____
Girl 2	A _____	Rh^- _____
Girl 3	O _____	Rh^+ _____
Girl 4	B _____	Rh^- _____
Boy 5	AB _____	Rh^+ _____
Boy 6	A _____	Rh^+ _____
Boy 7	AB _____	Rh^- _____
Boy 8	O _____	Rh^- _____

Name _____ Date _____

Finding the Children of John and Belinda

Child	Could be John and Belinda's? (yes or no)	Reasoning
Girl 1		
Girl 2		
Girl 3		
Girl 4		
Boy 5		
Boy 6		
Boy 7		
Boy 8		

Name _____ Date _____

Finding the Children of Mai and Paul

Child	Could be Mai and Paul's? (yes or no)	Reason
Girl 1		
Girl 2		
Girl 3		
Girl 4		
Boy 5		
Boy 6		
Boy 7		
Boy 8		

Finding the Children of Mai and Paul (Key)

Child	Could be Mai and Paul's? (yes or no)	Reason
Girl 1	no	Since Rh-negative blood is recessive, Rh-negative parents are homozygous for the recessive allele. Thus, two Rh-negative parents cannot have an Rh-positive child.
Girl 2	yes	Yes. Child has type A blood, which is possible if Paul carries an O allele.
Girl 3	no	Child has type O blood, which means she cannot be Mai's child since Mai's children must receive either an A or B allele. In addition, as described for Girl 1, an Rh-positive child cannot be the biological child of Mai and Paul.
Girl 4	yes	Type B blood in a child is possible for AB and B parents, and Girl 4 is Rh-negative, as expected for all children of Mai and Paul.
Boy 5	no	Since Rh-negative blood is recessive, Rh-negative parents are homozygous for the recessive allele. Thus, two Rh-negative parents cannot have an Rh-positive child.
Boy 6	no	Since Rh-negative blood is recessive, Rh-negative parents are homozygous for the recessive allele. Thus, two Rh-negative parents cannot have an Rh-positive child.
Boy 7	yes	A child with AB blood is possible, if he gets an A allele from Mai and a B allele from Paul. And Rh-negative blood is expected for all children of Mai and Paul.
Boy 8	no	Child has type O blood, which means he cannot be Mai's child since Mai's children must receive either an A or B allele.

Finding the Children of John and Belinda (Key)

Child	Could be John and Belinda's? (yes or no)	Reasoning
Girl 1	no	Belinda and John do not have any alleles for type B blood, so an AB child cannot be theirs.
Girl 2	yes	Girl 2 has type A negative blood, which is compatible with A positive and O positive parents. Getting an A allele from Belinda and an O allele from John would account for her blood type. Since Rh-negative blood is recessive, both Belinda and John could have given her a recessive allele.
Girl 3	yes	If Belinda has a recessive O allele, which is possible, their child could receive O alleles from both parents and have type O blood. Since both parents are Rh-positive, Girl 3 also has a compatible Rh factor.
Girl 4	no	Belinda and John do not have any alleles for type B blood, so a type B girl cannot be their daughter.
Boy 5	no	Belinda and John do not have any alleles for type B blood, so an AB child cannot be theirs.
Boy 6	yes	Belinda and John, who have type A and type O blood, can have a type A child. They are both Rh-positive and can have an Rh-positive child.
Boy 7	no	Belinda and John do not have any alleles for type B blood, so an AB child cannot be theirs.
Boy 8	yes	If Belinda has a recessive O allele, which is possible, their child could receive O alleles from both parents and have type O blood. Since both parents are Rh-positive, Boy 8 also has a compatible Rh factor.