Solving ABO Blood Type Punnett Squares

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Blood Type Genotypes

There are 4 blood types:

	possible genotypes		
Type A	$I^a I^a$	or	$I^a i$
Type B	$I^b I^b$	or	$I^b i$
Type AB	$I^a I^b$		
Type O	ii		

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Read the problem carefully!

Problem – A child has a blood type of O and her mother has type B blood. The man claiming to be the child's father has type A blood. Could this child possibly be his?

Assume for this problem that dad is $I^a i$ and mom is $I^b i$

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Make a Punnett square

- Each parent has two genes to possibly give to the child
- Place dad's genes on the outside on the left of the Punnett square
- Place mom's genes along the top
- Fill out the Punnett square

- Always put the dominant gene 1st
- Always put the genes in alphabetical order

	I^b	i
I^a	$I^a I^b$	$I^a i$
i	$I^b i$	ii

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Evaluate the ABO blood phenotypes

- Type AB
- Type A
- Type B
- Type O

	I^b	i
I^a	$I^a I^b$	$I^a i$
i	$I^b i$	ii

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Answer the original question

Problem – A child has a blood type of O and her mother has type B blood. The man claiming to be the child's father has type A blood. Could this child possibly be his?

- Since these parents could make children with type A, type B, type AB and type O blood types, **the father COULD have produced the child**

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You try one

◆ Mother has type O blood and father has type AB blood. Their newborn baby has type O blood. Is it possible that the hospital has made a mistake?

◆ Do the Punnett square and answer the questions before viewing the next slide

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Answer

◆ The Punnett square shows two type A ($I^a i$) and two type B ($I^b i$)

◆ There are no type O offspring predicted

◆ The hospital probably made a mistake and THIS CHILD CANNOT BE THEIRS

	I^a	I^b
i	$I^a i$	$I^b i$
i	$I^a i$	$I^b i$

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