

**1**

(a) How many pairs of chromosomes are there in a body cell of a human baby?

.....

**(1)**

(b) Place the following in order of size, **starting with the smallest**, by writing numbers **1 – 4** in the boxes underneath the words.

chromosome

nucleus

gene

cell

**(1)**

(c) For a baby to grow, its cells must develop in a number of ways.

Explain how each of the following is part of the growth process of a baby.

(i) Cell enlargement

.....

**(1)**

(ii) The process of cell division by mitosis

.....

.....

.....

.....

.....

.....

**(3)**

(d) Why is cell specialisation (differentiation) important for the development and growth of a healthy baby from a fertilised egg?

.....

.....

**(2)**

**(Total 8 marks)**

## Mark schemes

1

(a) 23 1

(b) chromosome    nucleus    gene    cell  
                  2                   3                   1                   4 1

(c) (i) any **one** from  
  
(cells which are bigger) take up more space  
  
(cells) have to get bigger **or** mature to divide 1

(ii) chromosomes duplicate **or**  
make exact copies of self  
*accept forms pairs of chromatids* 1

nuclei divide  
*accept chromatids **or***  
*chromosomes separate* 1

identical (daughter) cells formed  
*accept for example, skin cells make*  
*more skin cells **or** cells are clones* 1

(d) any **two** from  
  
*Differentiation mark*  
babies need **or** are made of different types of cells **or** cells that have  
different functions  
*accept different cells are needed*  
*for different organs*

*Division or specialisation mark*  
as fertilised egg starts to divide each cell specialises to form a part of the body  
*accept specialised cells make*  
*different parts of the body*

*Growth mark*  
specialised cells undergo mitosis to grow further cells  
*accept cells divide **or** reproduce*  
*to form identical cells*

2

[8]