5 Two jigsaw puzzles have the same number of pieces with identical shapes but have different pictures printed on them. One puzzle has a seaside picture and the other has a cartoon picture. A researcher believes that children will complete the cartoon puzzle more quickly. To test this belief, 10 children are randomly selected. The time taken in seconds for each child to complete each puzzle is recorded below.

Child	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*
Seaside	182	130	193	181	192	204	184	192	180	189
Cartoon	161	111	195	159	202	200	168	165	145	160

(a) Carry out a Wilcoxon matched-pairs signed-rank test at the 5% significance level to test the researcher's belief. [6]

(b) Show that using a paired-sample sign test at the 5% significance level would result in the opposite conclusion to that found in part **(a)**. [3]

It was later discovered that the experiment had been conducted such that each child completed the seaside puzzle first followed by the cartoon puzzle.

(c) Comment on the validity of using this experiment to test the researcher's belief. [1]