10 Each month, the manager of a large store records the number, c, of customers who visit the store, and the amount, £h, spent on heating during that month. The manager wants to test whether there is linear correlation between c and h.

For a randomly chosen year the value of Pearson's product-moment correlation coefficient, r, between c and h was -0.798, correct to 3 significant figures.

(a) Using the table below, carry out the test at the 1% significance level. **[5]**

(b) Describe briefly two main features of a scatter diagram that could be drawn to illustrate the values of c and h for this year. There is no need to draw a diagram. **[2]**

(c) The manager makes the following statement.

"The value of r shows that when we spend more on heating, fewer customers visit the store. So we should spend less on heating."

Comment briefly on this statement, making reference to the context. **[2]**

(d) Give a statement about a probability to explain the meaning of the value 0.7155 in the table below. **[2]**

Critical values of Pearson's product-moment correlation coefficient

	1-tail test	5%	2.5%	1%	0.5%
	2-tail test	10%	5%	2%	1%
	10	0.5494	0.6319	0.7155	0.7646
	11	0.5214	0.6021	0.6851	0.7348
n	12	0.4973	0.5760	0.6581	0.7079
	13	0.4762	0.5529	0.6339	0.6835