

## Version O

6) 0.340

## Version P

5) -0.972

There is a strong negative correlation. As  $c$  increases,  $f$  decreases.

## Version Q

4) 0.952

## Version R

0.9998

1 a

Base area, $x$ (cm <sup>2</sup> )	1.1	1.3	1.9	2.2	2.5	3.7
Time, $t$ (hours)	0.7	0.9	1.5	1.8	2.2	3.8
$\log x$	0.0414	0.114	0.279	0.342	0.398	0.568
$\log t$	-0.155	-0.0458	0.176	0.255	0.342	0.580

Calculating the PMCC for  $\log x$  and  $\log t$ :  $r = 0.9998$ .

## Version O

- E** 6 As part of a survey in a particular profession, age,  $x$  years, and yearly salary,  $\pounds y$  thousands, were recorded. The values of  $x$  and  $y$  for a randomly selected sample of ten members of the profession are as follows:

$x$	30	52	38	48	56	44	41	25	32	27
$y$	22	38	40	34	35	32	28	27	29	41

- a** Calculate, to 3 decimal places, the product moment correlation coefficient between age and salary. **(1 mark)**

## Version P

- E** 5 The following table shows the engine size ( $c$ ), in cubic centimetres, and the fuel consumption ( $f$ ), in miles per gallon to the nearest mile, for 10 car models.

$c$ (cm <sup>3</sup> )	1000	1200	1400	1500	1600	1800	2000	2200	2500	3000
$f$ (mpg)	46	42	43	39	41	37	35	29	28	25

- a** Use your calculator to find the value of the product moment correlation coefficient between  $c$  and  $f$ . **(1 mark)**
- b** Interpret your answer to part **a**. **(2 marks)**

## Version Q

- 4 Each of 10 cows was given an additive ( $x$ ) every day for four weeks to see if it would improve the milk yield ( $y$ ). At the beginning, the average milk yield per day was 4 gallons. The milk yield of each cow was measured on the last day of the four weeks. The table shows the data.

<b>Cow</b>	A	B	C	D	E	F	G	H	I	J
<b>Additive, <math>x</math> (25 g)</b>	1	2	3	4	5	6	7	8	9	10
<b>Yield, <math>y</math> (gallons)</b>	4.0	4.2	4.3	4.5	4.5	4.7	5.2	5.2	5.1	5.1

- b** Calculate the value of the product moment correlation coefficient for the first seven cows. **(2 marks)**

## Version R

- 1 Conor uses a 3D printer to produce various pieces for a model. He records the time taken,  $t$  hours, to produce each piece, and its base area,  $x$  cm<sup>2</sup>.

<b>Base area, <math>x</math> (cm<sup>2</sup>)</b>	1.1	1.3	1.9	2.2	2.5	3.7
<b>Time, <math>t</math> (hours)</b>	0.7	0.9	1.5	1.8	2.2	3.8

- a** Calculate the product moment correlation coefficient between  $\log x$  and  $\log t$ . **(2 marks)**