Candidate 1 evidence

3. You must refer to the information on 'Deductions from salaries' given in the pre-release material when answering this question.

Alaina earns a gross annual salary of £24,960. She pays 8.2% of her gross annual salary into her pension and pays £82.56 National Insurance per month.

Calculate her **net monthly salary** after all deductions. 4

$\frac{24960}{12}$ = £2080 a month

2080 − 82.56

= 1997.44 × 12

= 23969.28 × 8.2% = ~~1917.56~~ £1965.48

£23969.28 − 1965.48 = £22003.80

0% 19% 20%

14876 − 12570 = £2306

22003.80 − 14876 = £7127.8

0 12570 14876 22003.80

19% of 2306 = £438.14

20% of 7127.8 = £1425.56

£438.14 + £1425.56

= £1863.7

£22003.80 − £1863.7

= £20140.10

Monthly = $\frac{20140.10}{12}$

= £1678.34

Candidate 2 evidence

3. You must refer to the information on 'Deductions from salaries' given in the pre-release material when answering this question.

Alaina earns a gross annual salary of £24,960. She pays 8.2% of her gross annual salary into her pension and pays £82.56 National Insurance per month.

Calculate her **net monthly salary** after all deductions. 4

Gross annual Salary = £24960
" monthly " = 24960 ÷ 12
= £2080 P.M

8.2% of annual Salary
= 24960 x 8.2%
= £2046.72

NI: £82.56 P.M

(14876 − 12570) x 19% = £438.14
(24960 − 14876) x 20% = £2016.8
£2454.94

~~24960~~ 24960 − 2454.94 = 990.72 − 2046.72
= £19467.62 ÷ 12
= £1622.30 NET monthly salary

Candidate 3 evidence

Question 5

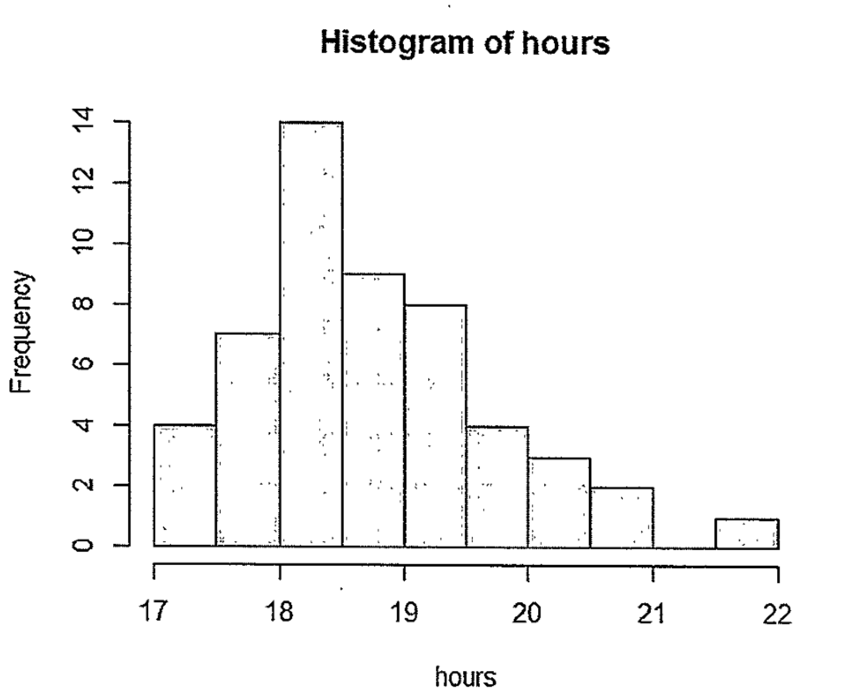
Name:

SCN:

Centre name:

(a) (i)

Statistical software output:



(ii)

Answer:
The date is right skewed

(iii)

Statistical software output:

```
> median(hours)
[1] 18.7
> IQR(hours)
[1] 1.225
```

Question 5

Name: | SCN:

Centre name:

Answer:

(b)

Answer:

People could be lying about how much they listened to the raido.

Candidate 4 evidence

Question 5

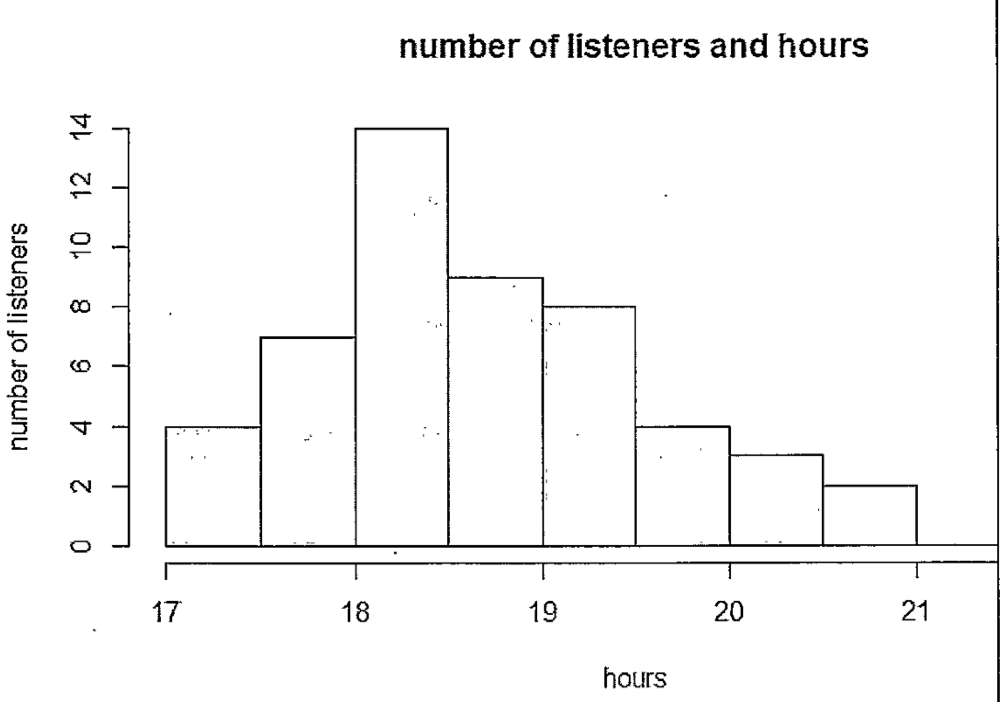
Name:

SCN:

Centre name:

(a) (i)

Statistical software output:



(ii)

Answer:
the data is roughly distributed

Candidate 5 evidence

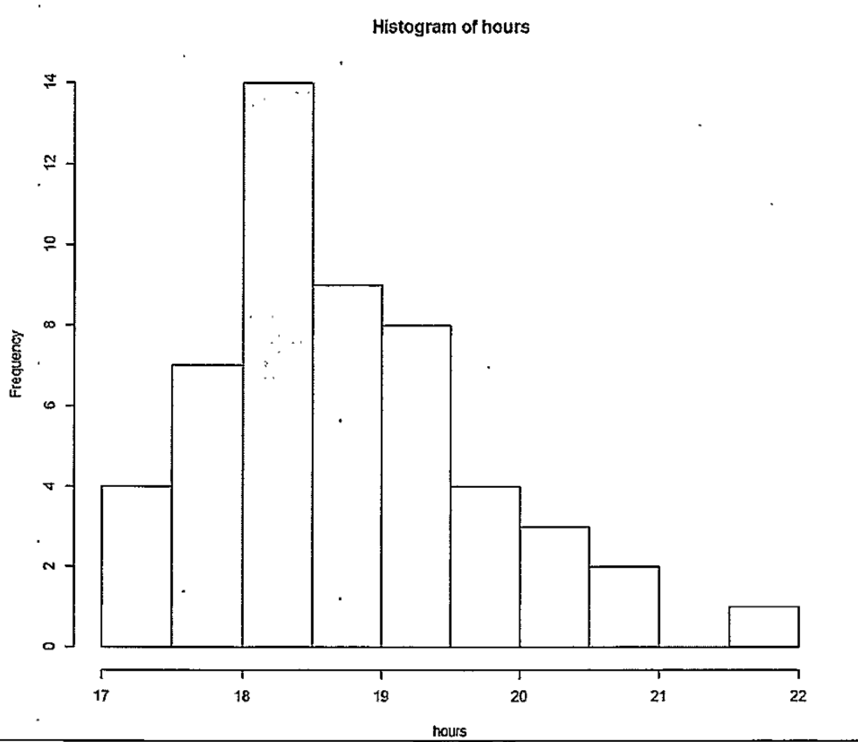
Question 5

Name: **SCN:**

Centre name:

(a) (i)

Statistical software output:



(ii)

Answer:
The data follows a rough bell-shaped curve which allows for the data to be normally distributed

(iii)

Statistical software output:

```
> mean(hours)
[1] 18.82692
> sd(hours)
[1] 0.997667
```

Question 5

Name: **SCN:**

Centre name:

Answer:
On average radio listeners listen to 18.83 hours of the radio a week
Radio listeners are consistent with the amount of hours they listen to the radio as the standard deviation is 1 hour

(b)

Answer:
People might be on holiday which wouldn't allow them to listen to the radio as much.

Candidate 6 evidence

6. You must refer to the information on 'Lifetime ISA' given in the pre-release material when answering this question.

Morgan opens a Lifetime ISA with an online bank. The account has an annual effective rate of interest of 3.25%.

Morgan makes a deposit of £2500 into the account on 1 January 2024. The government bonus is paid into her account on the first day of the following month.

She makes no further deposits in 2024.

Calculate the accumulated value of Morgan's Lifetime ISA on 31 December 2024. **4**

Annual Effective rate of 3.25%

~~Jan 1 2500 x 1.0325 = 2581.25~~

~~Feb 1~~

~~Mar 1~~

~~Apr 1~~

~~May 1~~

~~June 1~~

~~July 1~~

~~Aug 1~~

~~Sept 1~~

~~Oct 1~~

~~Nov 1~~

~~Dec 1~~

2500×1.0325^1

$= £2581.25$

$+ \ 1000$

$£3581.25$

Candidate 7 evidence

6. You must refer to the information on 'Lifetime ISA' given in the pre-release material when answering this question.

Morgan opens a Lifetime ISA with an online bank. The account has an annual effective rate of interest of 3.25%.

Morgan makes a deposit of £2500 into the account on 1 January 2024. The government bonus is paid into her account on the first day of the following month.

She makes no further deposits in 2024.

Calculate the accumulated value of Morgan's Lifetime ISA on 31 December 2024. **4**

1 Jan 2024: £2500

31 Jan 2024: $£2500 \times 1{\cdot}0325^{\frac{1}{12}} = £2506{\cdot}67$

1 Feb 2024: $£2506{\cdot}67 \times 1{\cdot}25 = £3133{\cdot}34$

31 December 2024: $£3133{\cdot}34 \times 1{\cdot}0325^{\frac{11}{12}} = \underline{\underline{£3226{\cdot}56}}$

Candidate 8 evidence

6. You must refer to the information on 'Lifetime ISA' given in the pre-release material when answering this question.

Morgan opens a Lifetime ISA with an online bank. The account has an annual effective rate of interest of 3.25%.

Morgan makes a deposit of £2500 into the account on 1 January 2024. The government bonus is paid into her account on the first day of the following month.

She makes no further deposits in 2024.

Calculate the accumulated value of Morgan's Lifetime ISA on 31 December 2024. 4

$2500 \times 0.25 = 625$

$2500 + 625 = 3125$

$3125 \times 0.0325 = 101.56$

$3125 + 101.56 = £3226.56$

Candidate 9 evidence

7. An events management company has been awarded a contract to construct the stages for a music festival.

If the construction of the stages is delayed the contract says that a penalty of £25,000 will be charged.

For the purposes of the cost-benefit analysis, the company has assumed only two events will cause a delay:

- a stage structure failing
- staff failing to attend the site.

The probability of no delay is 0.76.

(a) Calculate the expected cost of a delay. **2**

$1 - 0.76 = 0.24$

$0.24 \times 25000 = 6000$

£6000

7. (continued)

The company is considering using the following control measures:

- Control Measure 1 — Pay another company to have staff on standby to attend the site in the case of their staff being unable to attend, at a cost of £1000.
- Control Measure 2 — Have a spare stage on standby in case of a failure, at a cost of £1500.

The probability of staff failing to attend the site is 0.2.

The probability of a stage structure failing is 0.05.

(b) Calculate the expected cost if control measure 2 is taken. **1**

$1500 + 0.2 \times 6000$

$= £2700$

The expected cost if control measure 1 is taken is £2250.

The company will only use one control measure.

(c) Explain which control measure the company should use to minimise expected costs. **1**

The company should use control meure 1 due to ~~it~~ having the lowest expected cost.

Candidate 10 evidence

7. An events management company has been awarded a contract to construct the stages for a music festival.

If the construction of the stages is delayed the contract says that a penalty of £25,000 will be charged.

For the purposes of the cost-benefit analysis, the company has assumed only two events will cause a delay:

- a stage structure failing
- staff failing to attend the site.

The probability of **no delay** is 0.76.

(a) Calculate the expected cost of a delay. **2**

Probability of Delay: $1 - 0{\cdot}76 = 0{\cdot}24$

Expected Delay Cost $= 0{\cdot}24 \times £25\,000$
$= £6000$

7. (continued)

The company is considering using the following control measures:

- Control Measure 1 — Pay another company to have staff on standby to attend the site in the case of their staff being unable to attend, at a cost of £1000.
- Control Measure 2 — Have a spare stage on standby in case of a failure, at a cost of £1500.

The probability of staff failing to attend the site is 0.2.

The probability of a stage structure failing is 0.05.

(b) Calculate the expected cost if control measure 2 is taken. **1**

Control Measure 2: 0·2 × £25000 = £5000

Expected Cost = £5000 + £1500
= £6500

The expected cost if control measure 1 is taken is £2250.

The company will only use one control measure.

(c) Explain which control measure the company should use to minimise expected costs. **1**

Control measure 1 should be used as the expected cost is cheaper than control measure 2 and the expected cost with no control measures

Candidate 11 evidence

Question 8 (a)

	A	B	C	D	E	F
1		**Name:**				
2		**SCN:**				
3		**Centre name:**				
4						
5		**Bank loan repayment schedule**				
6						
7		Cost of car	£7,500.00			
8		Initial loan amount	£1,500.00			
9		Annual effective rate of interest	3.1%			
10		Monthly effective rate of interest	0.24%			
11		Loan period (months)	36			
12		Monthly repayment amount	£216.77			
13		Final repayment amount	£216.13			
14						
15						
16		**Time (months)**	**Repayment (£)**	**Interest content of repayment (£)**	**Capital content of repayment (£)**	**Loan outstanding (£)**
17		0				7500.00
18		1	216.77	0.52	216.25	7283.75
19		2	216.77	0.52	216.25	7067.50
20		3	216.77	0.52	216.25	6851.25
21		4	216.77	0.52	216.25	6635.00
22		5	216.77	0.52	216.25	6418.75
23		6	216.77	0.52	216.25	6202.50
24		7	216.77	0.52	216.25	5986.25
25		8	216.77	0.52	216.25	5770.00
26		9	216.77	0.52	216.25	5553.75
27		10	216.77	0.52	216.25	5337.50

Question 8 (a)

	A	B	C	D	E	F
1		Name:				
2		SCN:				
3		Centre name:				
4						
5		Bank loan repayment schedule				
28		11	216.77	0.52	216.25	5121.25
29		12	216.77	0.52	216.25	4905.00
30		13	216.77	0.52	216.25	4688.75
31		14	216.77	0.52	216.25	4472.50
32		15	216.77	0.52	216.25	4256.25
33		16	216.77	0.52	216.25	4040.00
34		17	216.77	0.52	216.25	3823.75
35		18	216.77	0.52	216.25	3607.50
36		19	216.77	0.52	216.25	3391.25
37		20	216.77	0.52	216.25	3175.00
38		21	216.77	0.52	216.25	2958.76
39		22	216.77	0.52	216.25	2742.51
40		23	216.77	0.52	216.25	2526.26
41		24	216.77	0.52	216.25	2310.01
42		25	216.77	0.52	216.25	2093.76
43		26	216.77	0.52	216.25	1877.51
44		27	216.77	0.52	216.25	1661.26
45		28	216.77	0.52	216.25	1445.01
46		29	216.77	0.52	216.25	1228.76
47		30	216.77	0.52	216.25	1012.51
48		31	216.77	0.52	216.25	796.26
49		32	216.77	0.52	216.25	580.01
50		33	216.77	0.52	216.25	363.76
51		34	216.77	0.52	216.25	147.51

Question 8 (a)

	A	B	C	D	E	F
1		Name:				
2		SCN:				
3		Centre name:				
4						
5		Bank loan repayment schedule				
52		35	216.77	0.52	216.25	-68.74
53		36	216.13	0.52	215.61	-284.35

Question 8 (a)

	A	B	C	D	E	F
1		Name:				
2		SCN:				
3		Centre name:				
4						
5		Bank loan repayment schedule				
6						
7		Cost of car	7500			
8		Initial loan amount	=1500			
9		Annual effective rate of interest	=3.1%			
10		Monthly effective rate of interest	=0.24%			
11		Loan period (months)	36			
12		Monthly repayment amount	216.77			
13		Final repayment amount	216.13			
14						
15						
16		Time (months)	Repayment (£)	Interest content of repayment (£)	Capital content of repayment (£)	Loan outstanding (£)
17		0				=C7
18		1	=$C$12	=C18*$C$10	=C18-D18	=F17-E18
19		2	=$C$12	=C19*$C$10	=C19-D19	=F18-E19
20		3	=$C$12	=C20*$C$10	=C20-D20	=F19-E20
21		4	=$C$12	=C21*$C$10	=C21-D21	=F20-E21
22		5	=$C$12	=C22*$C$10	=C22-D22	=F21-E22
23		6	=$C$12	=C23*$C$10	=C23-D23	=F22-E23
24		7	=$C$12	=C24*$C$10	=C24-D24	=F23-E24
25		8	=$C$12	=C25*$C$10	=C25-D25	=F24-E25
26		9	=$C$12	=C26*$C$10	=C26-D26	=F25-E26
27		10	=$C$12	=C27*$C$10	=C27-D27	=F26-E27
28		11	=$C$12	=C28*$C$10	=C28-D28	=F27-E28
29		12	=$C$12	=C29*$C$10	=C29-D29	=F28-E29
30		13	=$C$12	=C30*$C$10	=C30-D30	=F29-E30
31		14	=$C$12	=C31*$C$10	=C31-D31	=F30-E31
32		15	=$C$12	=C32*$C$10	=C32-D32	=F31-E32
33		16	=$C$12	=C33*$C$10	=C33-D33	=F32-E33
34		17	=$C$12	=C34*$C$10	=C34-D34	=F33-E34
35		18	=$C$12	=C35*$C$10	=C35-D35	=F34-E35
36		19	=$C$12	=C36*$C$10	=C36-D36	=F35-E36
37		20	=$C$12	=C37*$C$10	=C37-D37	=F36-E37
38		21	=$C$12	=C38*$C$10	=C38-D38	=F37-E38
39		22	=$C$12	=C39*$C$10	=C39-D39	=F38-E39
40		23	=$C$12	=C40*$C$10	=C40-D40	=F39-E40
41		24	=$C$12	=C41*$C$10	=C41-D41	=F40-E41
42		25	=$C$12	=C42*$C$10	=C42-D42	=F41-E42
43		26	=$C$12	=C43*$C$10	=C43-D43	=F42-E43
44		27	=$C$12	=C44*$C$10	=C44-D44	=F43-E44
45		28	=$C$12	=C45*$C$10	=C45-D45	=F44-E45
46		29	=$C$12	=C46*$C$10	=C46-D46	=F45-E46
47		30	=$C$12	=C47*$C$10	=C47-D47	=F46-E47

Question 8 (a)

	A	B	C	D	E	F
1		Name:				
2		SCN:				
3		Centre name:				
4						
5		Bank loan repayment schedule				
48		31	=$C$12	=C48*$C$10	=C48-D48	=F47-E48
49		32	=$C$12	=C49*$C$10	=C49-D49	=F48-E49
50		33	=$C$12	=C50*$C$10	=C50-D50	=F49-E50
51		34	=$C$12	=C51*$C$10	=C51-D51	=F50-E51
52		35	=$C$12	=C52*$C$10	=C52-D52	=F51-E52
53		36	=C13	=C53*$C$10	=C53-D53	=F52-E53

Candidate 12 evidence

Question 8 (a)

	A	B	C	D	E	F
1		Name:				
2		SCN:				
3		Centre name:				
4						
5		**Bank loan repayment schedule**				
6						
7		Cost of car	£7,500.00			
8		Initial loan amount	£7,586.95			
9		Annual effective rate of interest	1.9%			
10		Monthly effective rate of interest	0.153%			
11		Loan period (months)	36			
12		Monthly repayment amount	£216.77			
13		Final repayment amount	£216.13			
14						
15						
16		**Time (months)**	**Repayment (£)**	**Interest content of repayment (£)**	**Capital content of repayment (£)**	**Loan outstanding (£)**
17		0				7586.95
18		1	216.77	11.61	205.16	7381.79
19		2	216.77	11.30	205.47	7176.32
20		3	216.77	10.99	205.78	6970.54
21		4	216.77	10.67	206.10	6764.44
22		5	216.77	10.35	206.42	6558.02
23		6	216.77	10.04	206.73	6351.29
24		7	216.77	9.72	207.05	6144.24
25		8	216.77	9.41	207.36	5936.88
26		9	216.77	9.09	207.68	5729.20
27		10	216.77	8.77	208.00	5521.20

Question 8 (a)

	A	B	C	D	E	F
1		Name:				
2		SCN:				
3		Centre name:				
4						
5		Bank loan repayment schedule				
28		11	216.77	8.45	208.32	5312.88
29		12	216.77	8.13	208.64	5104.24
30		13	216.77	7.81	208.96	4895.28
31		14	216.77	7.49	209.28	4686.01
32		15	216.77	7.17	209.60	4476.41
33		16	216.77	6.85	209.92	4266.49
34		17	216.77	6.53	210.24	4056.25
35		18	216.77	6.21	210.56	3845.69
36		19	216.77	5.89	210.88	3634.81
37		20	216.77	5.56	211.21	3423.60
38		21	216.77	5.24	211.53	3212.07
39		22	216.77	4.92	211.85	3000.22
40		23	216.77	4.59	212.18	2788.04
41		24	216.77	4.27	212.50	2575.54
42		25	216.77	3.94	212.83	2362.71
43		26	216.77	3.62	213.15	2149.56
44		27	216.77	3.29	213.48	1936.08
45		28	216.77	2.96	213.81	1722.28
46		29	216.77	2.64	214.13	1508.14
47		30	216.77	2.31	214.46	1293.68
48		31	216.77	1.98	214.79	1078.89
49		32	216.77	1.65	215.12	863.77
50		33	216.77	1.32	215.45	648.32
51		34	216.77	0.99	215.78	432.55

Question 8 (a)

	A	B	C	D	E	F
1		Name:				
2		SCN:				
3		Centre name:				
4						
5		Bank loan repayment schedule				
52		35	216.77	0.66	216.11	216.44
53		36	216.77	0.33	216.44	0.00

Question 8 (a)

	A	B	C	D	E	F
1		Name:				
2		SCN:				
3		Centre name:				
4						
5		Bank loan repayment schedule				
6						
7		Cost of car	7500			
8		Initial loan amount	=35*C12			
9		Annual effective rate of interest	0.0185243713705606			
10		Monthly effective rate of interest	=(1+C9)^(1/12)-1			
11		Loan period (months)	36			
12		Monthly repayment amount	216.77			
13		Final repayment amount	216.13			
14						
15						
16		Time (months)	Repayment (£)	Interest content of repayment (£)	Capital content of repayment (£)	Loan outstanding (£)
17		0				=C8
18		1	=$C$12	=F17*$C$10	=C18-D18	=F17-E18
19		2	=$C$12	=F18*$C$10	=C19-D19	=F18-E19
20		3	=$C$12	=F19*$C$10	=C20-D20	=F19-E20
21		4	=$C$12	=F20*$C$10	=C21-D21	=F20-E21
22		5	=$C$12	=F21*$C$10	=C22-D22	=F21-E22
23		6	=$C$12	=F22*$C$10	=C23-D23	=F22-E23
24		7	=$C$12	=F23*$C$10	=C24-D24	=F23-E24
25		8	=$C$12	=F24*$C$10	=C25-D25	=F24-E25
26		9	=$C$12	=F25*$C$10	=C26-D26	=F25-E26
27		10	=$C$12	=F26*$C$10	=C27-D27	=F26-E27
28		11	=$C$12	=F27*$C$10	=C28-D28	=F27-E28
29		12	=$C$12	=F28*$C$10	=C29-D29	=F28-E29
30		13	=$C$12	=F29*$C$10	=C30-D30	=F29-E30
31		14	=$C$12	=F30*$C$10	=C31-D31	=F30-E31
32		15	=$C$12	=F31*$C$10	=C32-D32	=F31-E32
33		16	=$C$12	=F32*$C$10	=C33-D33	=F32-E33
34		17	=$C$12	=F33*$C$10	=C34-D34	=F33-E34
35		18	=$C$12	=F34*$C$10	=C35-D35	=F34-E35
36		19	=$C$12	=F35*$C$10	=C36-D36	=F35-E36
37		20	=$C$12	=F36*$C$10	=C37-D37	=F36-E37
38		21	=$C$12	=F37*$C$10	=C38-D38	=F37-E38
39		22	=$C$12	=F38*$C$10	=C39-D39	=F38-E39

Question 8 (a)

	A	B	C	D	E	F
1		Name:				
2		SCN:				
3		Centre name:				
4						
5		Bank loan repayment schedule				
40		23	=$C$12	=F39*$C$10	=C40-D40	=F39-E40
41		24	=$C$12	=F40*$C$10	=C41-D41	=F40-E41
42		25	=$C$12	=F41*$C$10	=C42-D42	=F41-E42
43		26	=$C$12	=F42*$C$10	=C43-D43	=F42-E43
44		27	=$C$12	=F43*$C$10	=C44-D44	=F43-E44
45		28	=$C$12	=F44*$C$10	=C45-D45	=F44-E45
46		29	=$C$12	=F45*$C$10	=C46-D46	=F45-E46
47		30	=$C$12	=F46*$C$10	=C47-D47	=F46-E47
48		31	=$C$12	=F47*$C$10	=C48-D48	=F47-E48
49		32	=$C$12	=F48*$C$10	=C49-D49	=F48-E49
50		33	=$C$12	=F49*$C$10	=C50-D50	=F49-E50
51		34	=$C$12	=F50*$C$10	=C51-D51	=F50-E51
52		35	=$C$12	=F51*$C$10	=C52-D52	=F51-E52
53		36	=$C$12	=F52*$C$10	=C53-D53	=F52-E53

Question 8 (a)

	A	B	C	D	E	F
1		Name:				
2		SCN:				
3		Centre name:				
4						
5		Bank loan repayment schedule				
6						
7		Cost of car	£7,500.00			
8		Initial loan amount	£7,586.95			
9		Annual effective rate of interest	1.9%			
10		Monthly effective rate of interest	0.153%			
11		Loan period (months)	36			
12		Monthly repayment amount	£216.77			
13		Final repayment amount	£216.13			
14						
15						
16		Time (months)	Repayment (£)	Interest content of repayment (£)	Capital content of repayment (£)	Loan outstanding (£)
17		0				7586.95
18		1	216.77	11.61	205.16	7381.79
19		2	216.77	11.30	205.47	7176.32
20		3	216.77	10.99	205.78	6970.54
21		4	216.77	10.67	206.10	6764.44
22		5	216.77	10.35	206.42	6558.02
23		6	216.77	10.04	206.73	6351.29
24		7	216.77	9.72	207.05	6144.24
25		8	216.77	9.41	207.36	5936.88
26		9	216.77	9.09	207.68	5729.20
27		10	216.77	8.77	208.00	5521.20

Question 8 (a)

	A	B	C	D	E	F
1		Name:				
2		SCN:				
3		Centre name:				
4						
5		Bank loan repayment schedule				
52		35	216.77	0.66	216.11	216.44
53		36	216.77	0.33	216.44	0.00

Candidate 13 evidence

Car insurance is a legal requirement for cars driven on UK roads.

(b) Explain the purpose of car insurance. 1

This is to repair any damages made to the car.

Candidate 14 evidence

Question 8 (c)

	A	B	C	D	E
1		Name:			
2		SCN:			
3		Centre name:			
4					
5					
6		Savings Schedule			
7		Initial deposit	£ 500.00		
8					
9		Monthly effective rate of interest from 1 August 2023 to 30 November 2023	0.240%		
10					
11		Annual effective rate of interest from 1 December 2023	3.1%		
12		Monthly effective rate of interest from 1 December 2023	0.255%		
13					
14		Regular monthly payment	£ 250.00		
15					
16		Account balance before payment is made on 1 August 2024	£3,253.16		
17					
18		Date	Account balance before payment (£)	Payment (£)	Balance after payment (£)
19		01 August 2023	0.00	500.00	501.20
20		01 September 2023	501.20	250.00	751.80
21		01 October 2023	751.80	250.00	1002.40
22		01 November 2023	1002.40	250.00	1253.00
23		01 December 2023	1253.00	250.00	1503.02
24		01 January 2024	1503.02	250.00	1753.04
25		01 February 2024	1753.04	250.00	2003.06
26		01 March 2024	2003.06	250.00	2253.08
27		01 April 2024	2253.08	250.00	2503.10
28		01 May 2024	2503.10	250.00	2753.12
29		01 June 2024	2753.12	250.00	3003.14
30		01 July 2024	3003.14	250.00	3253.16
31		01 August 2024	3253.16	250.00	3503.17
32					

Question 8 (c)

	A	B	C	D	E
1		Name:			
2		SCN:			
3		Centre name:			
4					
5					
6		Savings Schedule			
7		Initial deposit	500		
8					
9		Monthly effective rate of interest from 1 August 2023 to 30 November 2023	0.0024		
10					
11		Annual effective rate of interest from 1 December 2023	0.031		
12		Monthly effective rate of interest from 1 December 2023	=(1+3.1/100)^(1/12)-1		
13					
14		Regular monthly payment	250		
15					
16		Account balance before payment is made on 1 August 2024	=C31		
17					
18		Date	Account balance before payment (£)	Payment (£)	Balance after payment (£)
19		45139	0	500	=D19*(1+0.24/100)
20		45170	=E19	=$C$14	=D20*(1+0.24/100)+E19
21		45200	=E20	=$C$14	=D21*(1+0.24/100)+E20
22		45231	=E21	=$C$14	=D22*(1+0.24/100)+E21
23		45261	=E22	=$C$14	=D23*(1+3.1/100)^$C$12+E22
24		45292	=E23	=$C$14	=D24*(1+3.1/100)^$C$12+E23
25		45323	=E24	=$C$14	=D25*(1+3.1/100)^$C$12+E24
26		45352	=E25	=$C$14	=D26*(1+3.1/100)^$C$12+E25
27		45383	=E26	=$C$14	=D27*(1+3.1/100)^$C$12+E26
28		45413	=E27	=$C$14	=D28*(1+3.1/100)^$C$12+E27
29		45444	=E28	=$C$14	=D29*(1+3.1/100)^$C$12+E28
30		45474	=E29	=$C$14	=D30*(1+3.1/100)^$C$12+E29
31		45505	=E30	=$C$14	=D31*(1+3.1/100)^$C$12+E30
32					

Candidate 15 evidence

Question 8 (c)

	A	B	C	D	E
1		Name:			
2		SCN:			
3		Centre name:			
4					
5					
6		**Savings Schedule**			
7		Initial deposit	£ 500.00		
8					
9		Monthly effective rate of interest from 1 August 2023 to 30 November 2023	0.240%		
10					
11		Annual effective rate of interest from 1 December 2023	3.1%		
12		Monthly effective rate of interest from 1 December 2023	0.255%		
13					
14		Regular monthly payment	£ 250.00		
15					
16		Account balance before payment is made on 1 August 2024	£ 3,307.36		
17					
18		**Date**	**Account balance before payment (£)**	**Payment (£)**	**Balance after payment (£)**
19		01 August 2023	0.00	500.00	500.00
20		01 September 2023	501.20	250.00	751.20
21		01 October 2023	753.00	250.00	1003.00
22		01 November 2023	1005.41	250.00	1255.41
23		01 December 2023	1258.42	250.00	1508.42
24		01 January 2024	1512.27	250.00	1762.27
25		01 February 2024	1766.75	250.00	2016.75
26		01 March 2024	2021.89	250.00	2271.89

Question 8 (c)

	A	B	C	D	E
1		Name:			
2		SCN:			
3		Centre name:			
27		01 April 2024	2277.68	250.00	2527.68
28		01 May 2024	2534.12	250.00	2784.12
29		01 June 2024	2791.21	250.00	3041.21
30		01 July 2024	3048.96	250.00	3298.96
31		01 August 2024	3307.36	250.00	3557.36

Question 8 (c)

	A	B	C	D	E
1		Name:			
2		SCN:			
3		Centre name:			
4					
5					
6		Savings Schedule			
7		Initial deposit	500		
8					
9		Monthly effective rate of interest from 1 August 2023 to 30 November 2023	0.0024		
10					
11		Annual effective rate of interest from 1 December 2023	0.031		
12		Monthly effective rate of interest from 1 December 2023	=(1+C11)^(1/12)-1		
13					
14		Regular monthly payment	250		
15					
16		Account balance before payment is made on 1 August 2024	=C31		
17					
18		Date	Account balance before payment (£)	Payment (£)	Balance after payment (£)
19		45139	0	500	500
20		45170	=E19*(1+$C$9)	=$C$14	=C20+D20
21		45200	=E20*(1+$C$9)	=$C$14	=C21+D21
22		45231	=E21*(1+$C$9)	=$C$14	=C22+D22
23		45261	=E22*(1+$C$9)	=$C$14	=C23+D23
24		45292	=E23*(1+$C$12)	=$C$14	=C24+D24
25		45323	=E24*(1+$C$12)	=$C$14	=C25+D25
26		45352	=E25*(1+$C$12)	=$C$14	=C26+D26
27		45383	=E26*(1+$C$12)	=$C$14	=C27+D27
28		45413	=E27*(1+$C$12)	=$C$14	=C28+D28
29		45444	=E28*(1+$C$12)	=$C$14	=C29+D29
30		45474	=E29*(1+$C$12)	=$C$14	=C30+D30
31		45505	=E30*(1+$C$12)	=$C$14	=C31+D31

Candidate 16 evidence

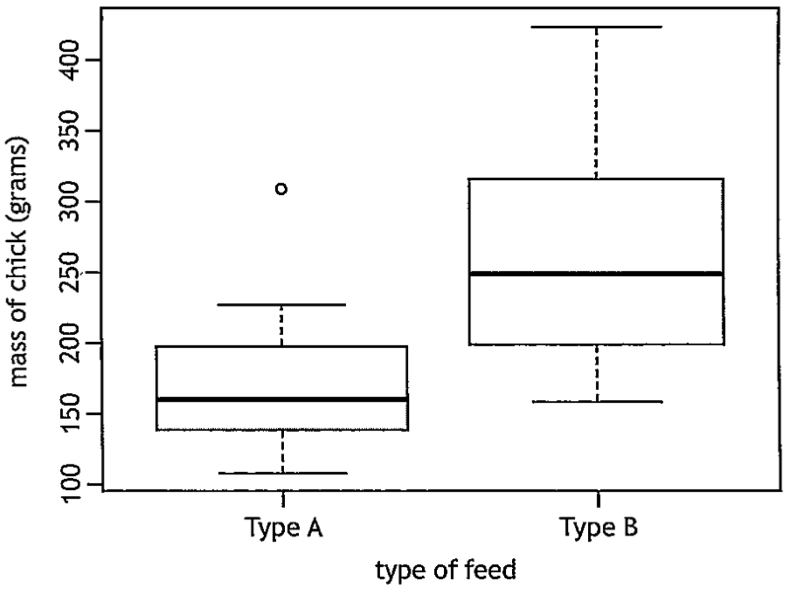
9. You must refer to the information on 'Feeding chicks' given in the pre-release material when answering this question.

To monitor the effect of the type of feed on their mass, a group of chicks were randomly allocated into two groups at birth.

One group was given feed type A and the second group was given feed type B from birth.

The comparative boxplot summarises the mass of chicks, in grams, when weighed at three weeks old.

Boxplot of mass of chicks



(a) Explain which type of feed results in chicks with the least variability in mass. **1**

Type a due to it having less of a Spread with Q1 to Q3 being tighter together

Candidate 17 evidence

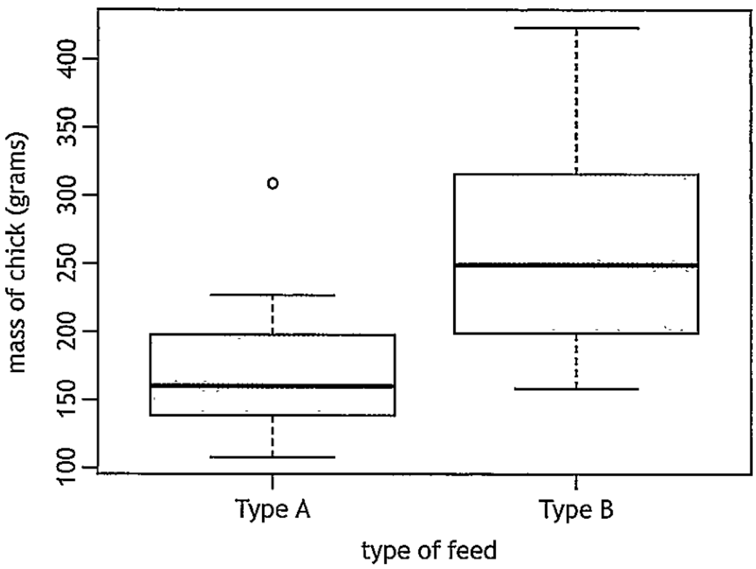
9. You must refer to the information on 'Feeding chicks' given in the pre-release material when answering this question.

To monitor the effect of the type of feed on their mass, a group of chicks were randomly allocated into two groups at birth.

One group was given feed type A and the second group was given feed type B from birth.

The comparative boxplot summarises the mass of chicks, in grams, when weighed at three weeks old.

Boxplot of mass of chicks



(a) Explain which type of feed results in chicks with the least variability in mass. **1**

Type A results in chicks with the least variability in mass as the least amount of mass is under 150grams

Candidate 18 evidence

(ii) Hence state the null and alternative hypotheses. **1**

The type of feed given to chicks affets there weight

The type of food given to chicks has no effet on weight

Candidate 19 evidence

The p-value was 0.003147.

(iii) Interpret the p-value, and the result of the hypothesis test, in context. **2**

As p-value < 0·05 we ~~reg~~ reject the null hypothesis and can therefore say that there is a statistically significant difference in the mass of chicks when using different chick feeds

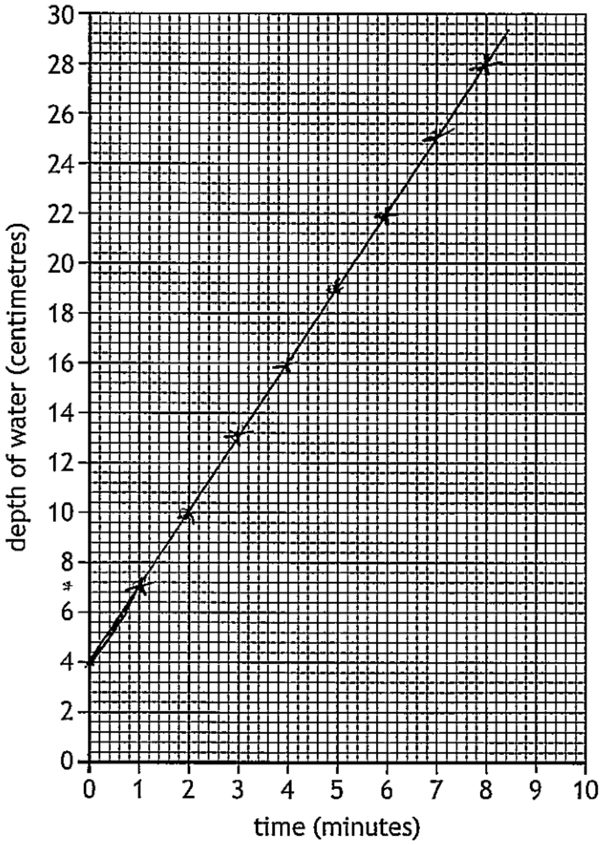
Candidate 20 evidence

(a) Draw a graph to model how the depth of water in the container changes over time until it is filled. Use the axes provided. **3**

(An additional diagram, if required, can be found on *page 22*.)

(An additional diagram, if required, can be found on *page 22*.)

Filling a cylindrical container



Candidate 21 evidence

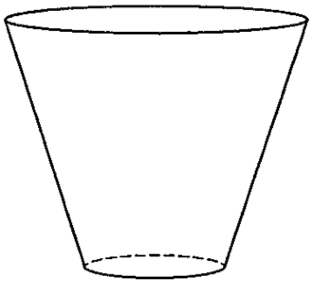
(ii) State the dependent variable in your graph. **1**

Water

Candidate 22 evidence

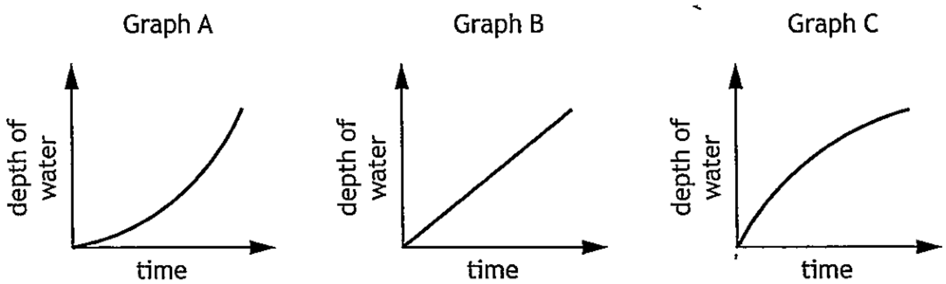
10. (continued)

Another container is shown below.



This container is also filled with water at a constant rate of 5 cubic centimetres per second.

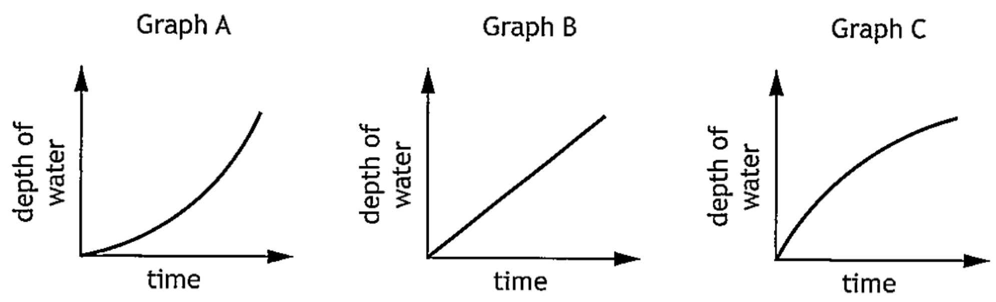
Three graphs are shown below showing how the depth of water in the container changes over time.



(c) Explain which graph could model the depth of water in the container. **2**

graph C due to it taking longer to fill near the top because the container gets bigger at the top

Candidate 23 evidence



(c) Explain which graph could model the depth of water in the container. 2

Graph A as it starts at 0
and increases

Candidate 24 evidence

11. Freddie has a credit card with an annual effective rate of interest of 29.9%. Interest is applied at the end of each month.

Payments must be made on the first day of each month. The minimum payment must be either 5% of the balance outstanding at that time or £5, whichever is higher.

After Freddie makes his payment on 1 March, the balance of his credit card was £823.19.

Freddie does not use his credit card during March.

(a) Calculate the balance of his credit card on 1 April after Freddie has made the minimum payment. 3

£41.16

$823.19 - 41.16 = £782.03$

$782.03 \times \left(1 + \frac{29.9}{100}\right)^{\frac{1}{12}}$

$= £799.27$

Candidate 25 evidence

11. Freddie has a credit card with an annual effective rate of interest of 29.9%. Interest is applied at the end of each month.

Payments must be made on the first day of each month. The minimum payment must be either 5% of the balance outstanding at that time or £5, whichever is higher.

After Freddie makes his payment on 1 March, the balance of his credit card was £823.19.

Freddie does not use his credit card during March.

(a) Calculate the balance of his credit card on 1 April after Freddie has made the minimum payment. **3**

29.9% annual
higher than £5

1/3 - 823.19 1/4

1.299×823.19
$= 1069.32$

Candidate 26 evidence

11. Freddie has a credit card with an annual effective rate of interest of 29.9%. Interest is applied at the end of each month.

Payments must be made on the first day of each month. The minimum payment must be either 5% of the balance outstanding at that time or £5, whichever is higher.

After Freddie makes his payment on 1 March, the balance of his credit card was £823.19.

Freddie does not use his credit card during March.

(a) Calculate the balance of his credit card on 1 April after Freddie has made the minimum payment. **3**

1/3 1/4

$1{\cdot}299^{1/12} \times 823{\cdot}19 = 841{\cdot}33 - 41{\cdot}16$

$= £800{\cdot}17$

5% × 823·19

= £41·16

Candidate 27 evidence

(b) Give one reason why Freddie should consider paying the full balance of his credit card each month. **1**

~~So that the~~ If he didnt the intrest would get higher meaning he would hae to Pay more the next month

Candidate 28 evidence

(b) Give one reason why Freddie should consider paying the full balance of his credit card each month. **1**

To get a good credit score, and not stress himself out with missed Payments