3.18-2 Science: Working Scientifically and Practical Skills Set 2: 30-minute Pack

Total Marks

ISEB Common Entrance 13+ Science · Calculator allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 In a school investigation, which variable is measured or observed as the outcome of the experiment?

- ☐ A) Independent variable
- ☐ B) Dependent variable
- ☐ C) Control variable
- ☐ D) Categoric variable

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2 A pupil measures the mass of a sample (g) 3 times and records: 31.5, 31.1, 31.9. Calculate the mean.

- ☐ A) 23.625 g
- ☐ B) 94.5 g
- ☐ C) 47.25 g
- ☐ D) 0.8 g
- ☐ E) 31.5 g

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3 Three temperature readings were: 15°C, 14°C and 28°C. Calculate the mean using only the two consistent readings.

(1)

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4 A pupil measures the length of a spring (cm) 5 times and records: 38, 37.4, 38.6, 37.8, 38.2. Calculate the mean.

- ☐ A) 380 cm
- ☐ B) 1.2 cm
- ☐ C) 38 cm
- ☐ D) 190 cm
- ☐ E) 47.5 cm

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5 As age increases, reaction time increases in elderly people. State the correlation.

(1)

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6 A pupil measures the time for a ball to fall (s) 5 times and records: 18.7, 17.6, 17.3, 18, 18.4. Calculate the mean.

- ☐ A) 18 s
- ☐ B) 90 s
- ☐ C) 22.5 s
- ☐ D) 1.4 s
- ☐ E) 15 s

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7 As the amount of fertiliser increases, crop yield increases. State the type of correlation.

(1)

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8 When testing how pH affects bacterial growth, which type of variable is the number of bacteria recorded?

- ☐ A) Qualitative variable
- ☐ B) Independent variable
- ☐ C) Control variable
- ☐ D) Dependent variable

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9 A pupil measures the time for a ball to fall (s) 5 times and records: 37.2, 37.8, 38.2, 36.8, 37.5. Calculate the mean.

- ☐ A) 37.5 s
- ☐ B) 46.875 s
- ☐ C) 187.5 s
- ☐ D) 31.25 s
- ☐ E) 1.4 s

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10 A ruler was damaged, making all length measurements 0.5 cm too long. State the type of error.

(1)

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11 A pupil measures the volume of gas collected (cm3) 4 times and records: 34.2, 33.3, 32.8, 33.7. Calculate the range of the results.

- ☐ A) 67 cm^3
- ☐ B) 1.4 cm^3
- ☐ C) 34.2 cm^3
- ☐ D) 32.8 cm^3
- ☐ E) 33.5 cm^3

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12 State the correlation type when plant height decreases as salt concentration in soil increases.

(1)

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13 A pupil measures the mass of a sample (g) 3 times and records: 12, 11.8, 12.2. Calculate the mean.

- ☐ A) 36 g
- ☐ B) 9 g
- ☐ C) 18 g
- ☐ D) 0.4 g
- ☐ E) 12 g

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14 A weight of 500 g is attached to a spring. Calculate the force in newtons. (g = 10 N/kg.)

(1)

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15 A pupil repeats an experiment and records the temperature rise (°C): 20.5, 15.4, 15.4, 15.6, 15.6. The result 20.5 is an anomaly. Calculate the mean of the remaining results.

- ☐ A) 16.5°C
- ☐ B) 0.2°C
- ☐ C) 15.6°C
- ☐ D) 15.5°C
- ☐ E) 12.4°C

---

16 A thermometer was not fully immersed, causing every temperature to read 3°C lower. Name this type of error.

(1)

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17 A pupil measures the volume of gas collected (cm3) 5 times and records: 21.9, 23.1, 22.4, 22.5, 22.6. Calculate the mean.

- ☐ A) 1.2 cm^3
- ☐ B) 22.5 cm^3
- ☐ C) 18.75 cm^3
- ☐ D) 28.125 cm^3
- ☐ E) 112.5 cm^3

---

18 A pupil measures the length of a spring (cm) 4 times and records: 19.5, 19.7, 20.5, 20.3. Calculate the mean.

- ☐ A) 200 cm
- ☐ B) 80 cm
- ☐ C) 20 cm
- ☐ D) 1 cm
- ☐ E) 16 cm

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19 A pupil measures the volume of gas collected (cm3) 4 times and records: 17.3, 18.1, 18.7, 17.9. Calculate the range of the results.

- [ ] A) 36 cm^3
- [ ] B) 18.7 cm^3
- [ ] C) 18 cm^3
- [ ] D) 17.3 cm^3
- [ ] E) 1.4 cm^3

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20 A pupil measures the time for a ball to fall (s) 3 times and records: 12.5, 12.2, 12.8. Calculate the range of the results.

- [ ] A) 0.6 s
- [ ] B) 12.2 s
- [ ] C) 12.8 s
- [ ] D) 12.5 s
- [ ] E) 25 s

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21 A pupil measures the time for a ball to fall (s) 3 times and records: 15.5, 15.1, 15.9. Calculate the range of the results.

- [ ] A) 15.9 s
- [ ] B) 15.1 s
- [ ] C) 31 s
- [ ] D) 0.8 s
- [ ] E) 15.5 s

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22 A pupil measures the mass of a sample (g) 4 times and records: 28, 29, 28.4, 28.6. Calculate the mean.

- [ ] A) 1 g
- [ ] B) 38 g
- [ ] C) 114 g
- [ ] D) 28.5 g
- [ ] E) 22.8 g

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23 A pupil repeats an experiment and records the mass of a sample (g): 13.8, 21.5, 14, 13.2, 13. The result 21.5 is an anomaly. Calculate the mean of the remaining results.

- [ ] A) 1 g
- [ ] B) 10.8 g
- [ ] C) 15.1 g
- [ ] D) 13.8 g
- [ ] E) 13.5 g

---

24 A pupil repeats an experiment and records the mass of a sample (g): 15, 23.3, 22.7, 23.6, 22.4. The result 15 is an anomaly. Calculate the mean of the remaining results.

- [ ] A) 21.4 g
- [ ] B) 18.4 g
- [ ] C) 23 g
- [ ] D) 22.7 g
- [ ] E) 1.2 g

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25 A pupil measures the time for a ball to fall (s) 3 times and records: 18.3, 17.7, 18. Calculate the mean.

- [ ] A) 18 s
- [ ] B) 13.5 s
- [ ] C) 54 s
- [ ] D) 27 s
- [ ] E) 0.6 s

---

26 A pupil measures the volume of gas collected (cm3) 5 times and records: 31.4, 30.6, 31, 30.9, 31.1. Calculate the mean.

- [ ] A) 155 cm^3
- [ ] B) 0.8 cm^3
- [ ] C) 38.75 cm^3
- [ ] D) 310 cm^3
- [ ] E) 31 cm^3

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27 A pupil measures the time for a ball to fall (s) 5 times and records: 20.3, 19.4, 20, 19.7, 20.6. Calculate the mean.

- [ ] A) 1.2 s
- [ ] B) 20 s
- [ ] C) 25 s
- [ ] D) 100 s
- [ ] E) 200 s

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28 A pupil measures the time for a ball to fall (s) 4 times and records: 34.7, 34.3, 35.3, 35.7. Calculate the mean.

- [ ] A) 35 s
- [ ] B) 140 s
- [ ] C) 1.4 s
- [ ] D) 350 s
- [ ] E) 28 s

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29 As altitude increases, atmospheric pressure decreases. What type of correlation is shown?

(1)

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30 A pupil measures the mass of a sample (g) 4 times and records: 15.9, 14.9, 15.1, 16.1. Calculate the range of the results.

- [ ] A) 14.9 g
- [ ] B) 16.1 g
- [ ] C) 1.2 g
- [ ] D) 15.5 g
- [ ] E) 31 g

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31 In an experiment on the effect of temperature on enzyme activity, which variable is measured as the outcome?

- [ ] A) Categoric variable
- [ ] B) Control variable
- [ ] C) Dependent variable
- [ ] D) Independent variable

---

32 A pupil repeats an experiment and records the volume of gas collected (cm3): 13.7, 13.6, 23.5, 13.3, 13.4. The result 23.5 is an anomaly. Calculate the mean of the remaining results.

- [ ] A) 15.5 cm^3
- [ ] B) 13.6 cm^3
- [ ] C) 10.8 cm^3
- [ ] D) 13.5 cm^3
- [ ] E) 0.4 cm^3

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Mark scheme · 3.18-2 Science: Working Scientifically and Practical Skills Set 2: 30-minute Pack

Question 1

B cao **B1**

Answer: B) Dependent variable

Question 2

E (31.5 g) **B1**

Answer: E) 31.5 g

Question 3

14.5°C (oe) **B1**

Answer: 14.5°C

Question 4

C (38 cm) **B1**

Answer: C) 38 cm

Question 5

A positive correlation (oe) **B1**

Answer: A positive correlation

Question 6

A (18 s) **B1**

Answer: A) 18 s

Question 7

A positive correlation (oe) **B1**

Answer: A positive correlation

Question 8

D (Dependent variable) cao **B1**

Answer: D) Dependent variable

Question 9

A (37.5 s) **B1**

Answer: A) 37.5 s

Question 10

A systematic error (oe) **B1**

Answer: A systematic error

Question 11

B (1.4 cm^3) **B1**

Answer: B) 1.4 cm^3

Question 12

A negative correlation (oe) **B1**

Answer: A negative correlation

Question 13

E (12 g) **B1**

Answer: E) 12 g

Question 14

5 N (oe) **B1**

Answer: 5 N

Question 15

D (15.5°C) **B1**

Answer: D) 15.5°C

Question 16

A systematic error (oe) **B1**

Answer: A systematic error

Question 17

B (22.5 cm^3) **B1**

Answer: B) 22.5 cm^3

Question 18

C (20 cm) **B1**

Answer: C) 20 cm

Question 19

E (1.4 cm^3) **B1**

Answer: E) 1.4 cm^3

Question 20

A (0.6 s) **B1**

Answer: A) 0.6 s

Question 21

D (0.8 s) **B1**

Answer: D) 0.8 s

Question 22

D (28.5 g) **B1**

Answer: D) 28.5 g

Question 23

E (13.5 g) **B1**

Answer: E) 13.5 g

Question 24

C (23 g) **B1**

Answer: C) 23 g

Question 25

A (18 s) **B1**

Answer: A) 18 s

Question 26

E (31 cm^3) **B1**

Answer: E) 31 cm^3

Question 27

B (20 s) **B1**

Answer: B) 20 s

Question 28

A (35 s) **B1**

Answer: A) 35 s

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Question 29

A negative correlation (oe) **B1**

Answer: A negative correlation

Question 30

C (1.2 g) **B1**

Answer: C) 1.2 g

Question 31

C (Dependent variable) cao **B1**

Answer: C) Dependent variable

Question 32

D (13.5 cm^3) **B1**

Answer: D) 13.5 cm^3

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