Exploring the Investigative World of Science

Standard difficulty · 20 questions · 40 marks · Time: 36 minutes

Name: _____ Date: _____ Score: ____ / 40

Show your working for Sections B and C. Answers are on the last page — try every question first!

Section A — Choose the correct answer — 8 × 1 = 8 marks

1. In an investigation, the thing you deliberately change is the:

(a) thing you keep the same **(b)** conclusion
(c) result you measure **(d)** variable you test

2. To test whether the temperature of the oil affects puffing, which ONE thing should you change?

(a) how the puri is dropped into the oil **(b)** the size of the puri
(c) the temperature of the oil **(d)** the type of flour

3. Which of these can be MEASURED?

(a) how lucky the day is **(b)** how much the cook likes it
(c) whether the puri looks happy **(d)** the mass of a dough ball in grams

4. Which of these is an OBSERVATION?

(a) one side of the puri was thinner **(b)** hotter oil may make puris puff faster
(c) thin dough may heat through more quickly **(d)** steam inside may make the puri puff

5. Which of these is a HYPOTHESIS?

(a) the thin puris puffed and the thick ones did not
(b) the puri puffed in 6 seconds
(c) the oil bubbled when the dough went in
(d) the thinner side may be the side that touched the oil first

6. Three puris took 8 s, 11 s, 6 s to puff. What was the total time?

(a) 33 s **(b)** 28 s **(c)** 25 s **(d)** 23 s

7. Thin puris took 5 s to puff and thick ones 15 s. How many seconds longer did the thick ones take?

(a) 15 s **(b)** 20 s **(c)** 10 s **(d)** 5 s

8. Out of 25 puris made from thin dough, 19 puffed. How many did not?

(a) 25 puris **(b)** 19 puris **(c)** 6 puris **(d)** 44 puris

Section B — Short answer — 8 × 2 = 16 marks

9. What is a variable in an investigation?

10. Write "observation" or "hypothesis": (a) the thinner side may be the side that touched the oil first (b) one side of the puri was thinner

11. Can it be measured? Write "yes" or "no": (a) which puri is the friendliest (b) the mass of a dough ball in grams

12. Plan a fair test of (a) the size of the puri and (b) how the puri is dropped into the oil. What would you keep the same?

13. Four tries timed a puri puffing: 13 s, 13 s, 5 s, 14 s. What is the difference between the slowest and quickest?

14. Each dough ball weighs 27 g. How much dough is needed for 6 puris? Give the answer in grams.

15. The oil was at 153 °C for the first batch and 161 °C for the second. By how many degrees was it hotter for the second?

16. A group tested 6 kinds of flour, making 5 puris of each. How many puris did they make?

Section C — Word problems — 4 × 4 = 16 marks

17. Plan an investigation into why a puri puffs up. Say what you will change, keep the same and measure.

18. A group tested thin and thick dough three times each. Thin: 6 s, 6 s, 5 s. Thick: 12 s, 15 s, 14 s. (a) Find the total time for each. (b) What can you conclude? (c) Name two things they must keep the same.

19. Choose either the size of the puri or how the puri is dropped into the oil. Write a full investigation: question, what you change, keep the same and measure, and how you will record results.

20. A seedling's height was measured on five days: 74 mm, 56 mm, 75 mm, 65 mm, 59 mm. (a) Which readings look odd if it grows steadily? (b) What should the student do? (c) Why keep notes of everything observed?

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Answer key

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Q	Answer	Working
1	**(d) variable you test**	—
2	**(c) the temperature of the oil**	change one thing, keep the rest the same
3	**(d) the mass of a dough ball in grams**	—
4	**(a) one side of the puri was thinner**	—
5	**(d) the thinner side may be the side that touched the oil first**	—
6	**(c) 25 s**	8 + 11 + 6
7	**(c) 10 s**	15 − 5 = 10
8	**(c) 6 puris**	25 − 19 = 6
9	**Something that can change or be changed, such as the thickness of dough or the oil temperature.**	—
10	**(a) hypothesis (b) observation**	—
11	**(a) no (b) yes**	—
12	**(a) change only the size of the puri; keep the others the same; measure the time to puff (b) change only how the puri is dropped into the oil; keep the others the same; measure the time to puff**	—
13	**9 s**	14 − 5
14	**162 g**	27 × 6
15	**8 °C**	161 − 153
16	**30 puris**	6 × 5
17	**Change one thing, for example the thickness of the dough. Keep the flour, size, oil temperature and the way it is dropped in the same. Measure whether it puffs and how many seconds it takes. Repeat each test and record the results in a table.**	—
18	**(a) Thin: 17 s; thick: 41 s (b) Thin dough puffs faster. (c) The flour, the oil temperature (also the size, the way it is dropped in).**	—
19	**(a) any sensible fair-test plan (b) any sensible fair-test plan**	—

Q	Answer	Working
20	**Any reading that is smaller than the one before is odd for a growing plant. Measure again carefully and check the method. Notes help find mistakes and patterns later.**	—