Particles of Matter

Matter looks continuous, but it is made of extremely small particles. Two crystals of potassium permanganate can colour glass after glass of water.

Name: Date: Score: ____ / 17

A. Fill in the blanks

1. Matter is made of very tiny ____.

2. Matter is not ____; it is made of particles.

3. In the $KMnO_4$ activity the colour stays even after many ____.

4. Particles of matter are too small to see even with an ordinary ____.

B. True or False

5. A few crystals of $KMnO_4$ contain a huge number of particles. True / False

6. Matter is one continuous block with no particles. True / False

7. Particles of matter can be seen with a hand lens. True / False

8. Dissolving sugar spreads its particles through the water. True / False

C. Assertion and reason

9. Assertion (A): The colour of $KMnO_4$ solution remains after many dilutions.
Reason (R): One crystal contains millions of tiny particles.

(a) Both A and R are true, and R explains A
(b) Both A and R are true, but R does not explain A
(c) A is true, R is false
(d) A is false, R is true

Answer: _____

10. Assertion (A): We can see particles of matter with a school microscope.
Reason (R): Particles of matter are extremely small.

(a) Both A and R are true, and R explains A
(b) Both A and R are true, but R does not explain A
(c) A is true, R is false
(d) A is false, R is true

Answer: _____

D. Choose the correct option

11. The $KMnO_4$ dilution activity shows that particles are:

(a) large
(b) very small and numerous
(c) coloured only
(d) fixed

Answer: _____

12. Matter is:

(a) continuous
(b) made of particles
(c) made of energy
(d) empty

Answer: _____

13. After dissolving salt, the salt:

(a) disappears
(b) is spread as particles
(c) turns into water
(d) becomes air

Answer: _____

14. Particles of matter are best described as:

(a) visible grains
(b) extremely tiny
(c) as big as cells
(d) as big as dust

Answer: _____

E. Short answer questions

15. Describe the $KMnO_4$ dilution activity and its conclusion.

16. Why does sugar seem to disappear in water?

F. Match the columns

17. Match each item in Column A with the correct item in Column B.

Column A	Column B	Your answer
1. $KMnO_4$ dilution	(a) Made of particles	1 → ____
2. Matter	(b) Particles spread out	2 → ____
3. Dissolving	(c) Cannot show particles	3 → ____
4. Ordinary microscope	(d) Particles are tiny and many	4 → ____

Detailed solutions

1. particles

2. continuous

3. dilutions

4. microscope

5. True. The colour spreads through many dilutions.

6. False. Experiments show it is particulate.

7. False. They are far too small.

8. True. The sugar is still there, as particles.

9. (a) Enough particles remain after each dilution; R explains A.

10. (d) A is false; R is true.

11. (b) very small and numerous. Colour remains after many dilutions.

12. (b) made of particles. Particulate nature.

13. (b) is spread as particles. Taste shows it is there.

14. (b) extremely tiny. Far below microscope range.

15. Dissolve a few crystals in water and keep diluting. The colour stays through many dilutions, so a few crystals hold millions of tiny particles: matter is made of very small particles.

16. Its particles spread into the spaces between water particles; it is still present, which we can taste.

17. 1 → (d), 2 → (a), 3 → (b), 4 → (c). Everyday activities reveal the particle nature of matter.