Ratios and Measurement

Unit 3 Test

Standards 6.NS.A.1, 6.RP.A.1, 6.RP.A.3a, 6.RP.A.3d

Learning target I can apply the skills taught so far, show my reasoning, and check my answers.

Assessment 20 open-response questions. Questions 1–4 review Unit 2; the remaining 16 assess this unit. Review accounts for exactly 20% of questions and points.

Administration

0–5 minutes Distribute only the attached student assessment pages. Read directions and confirm students have pencils, rulers, and extra plotting paper when needed. Ask for calculations, models, labels, and explanations where requested.

5–45 minutes Students complete the unit test independently. Allow an extended block for model-heavy responses as needed. Follow the course policy of doing arithmetic by hand unless an established classroom accommodation applies.

Final minutes Collect responses and ask students to note one item they want to revisit. Use the next teaching session for corrections and focused reteaching.

Scoring and Feedback

5 points each, 100 total: 2 for setup or model, 2 for calculation or reasoning, 1 for units, interpretation, or the requested check.

Score prior-unit review separately from current-unit work. Accept equivalent exact answers and valid alternate methods. For drawings, use the coordinate, face, frequency, or summary information in the attached key to check the representation.

Suggested follow-up based on current-unit items: 80% or above, continue with brief corrections; 60–79%, provide targeted small-group support; below 60%, reteach with models. These are instructional suggestions, not state proficiency cut scores.

Likely misconceptions Watch the order of ratio labels, part-to-whole denominators, and scaling only one quantity.

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Standards assessed 6.NS.A.1, 6.RP.A.1, 6.RP.A.3a, 6.RP.A.3d

Questions 1–4 review Unit 2 (20%). The remaining questions assess this unit. Show work, simplify exact answers, label units, and justify models or explanations. 5 points per question; 100 points total.

1. [Review] Draw a bar partitioned into 10 equal parts. Shade 9 parts. Circle groups of 9 parts. Use the model to find 9/10 ÷ 9/10.

2. [Review] Calculate 1/2 ÷ 1/2. Simplify.

3. [Review] A ribbon is 3/4 m long. Each piece is 1/4 m. How many piece-lengths are in the ribbon? Include any fractional piece.

4. [Review] Calculate 2 ÷ 1/8. Simplify.

5. [Current unit] A tray has 4 red tiles and 5 blue tiles. Write the red-to-blue ratio in simplest form.

6. [Current unit] A collection has 18 green and 6 yellow counters. Write the fraction that is green.

7. [Current unit] The ratio of oak trees to pine trees is 5:4. There are 45 trees altogether. Draw a tape diagram and find each count.

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8. [Current unit] A mix uses 5 cups of oats for 6 cups of seeds. Complete the table (oats, seeds): (5, 6), (10, ___), (10, ___).

9. [Current unit] A mix uses 2 cups of oats for 5 cups of seeds. Complete the table (oats, seeds): (2, 5), (4, ___), (10, ___).

10. [Current unit] Draw aligned number lines for 3 liters of paint covering 2 square meters. Mark 0, one batch, and 3 batches. How much area do 9 liters cover?

11. [Current unit] Mix A has 6 cups juice for 5 cups water. Mix B has 34 cups juice for 25 cups water. Which is stronger in juice? Show equivalent ratios.

12. [Current unit] For every 5 tickets sold, a club earns $4. Make a table for 0, 1, 2, and 6 batches. Plot (tickets, dollars), label axes, and interpret (30, 24).

13. [Current unit] The ratio of oak trees to pine trees is 6:3. There are 18 trees altogether. Draw a tape diagram and find each count.

14. [Current unit] Convert 3/2 yards to feet. Show the conversion ratio and explain why the numerical value grows.

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15. [Current unit] Convert 3/2 meters to centimeters. Show the conversion ratio and explain why the numerical value grows.

16. [Current unit] Convert 60 minutes to hours. Show the conversion ratio.

17. [Current unit] A tray has 14 red tiles and 8 blue tiles. Write the red-to-blue ratio in simplest form and complete: there are ___ times as many red as blue.

18. [Current unit] A collection has 12 green and 24 yellow counters. Write the fraction that is green and the green-to-yellow ratio in simplest form. Explain the different denominators.

19. [Current unit] The ratio of oak trees to pine trees is 6:2. There are 24 trees altogether. Draw a tape diagram and find each count and the difference between the counts.

20. [Current unit] A mix uses 2 cups of oats for 4 cups of seeds. Complete the table (oats, seeds): (2, 4), (4, ___), (12, ___) and explain how you know the last two rows are equivalent.

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1. 1
Reasoning Each small part is 1/10; 9 shaded parts divided into groups of 9 gives 9/9 = 1 groups.

2. 1
Reasoning 1/2 ÷ 1/2 = 1/2 × 2 = 1.

3. 3 piece-lengths
Reasoning 3/4 ÷ 1/4 = 3/4 × 4 = 3.

4. 16
Reasoning 2 ÷ 1/8 = 2 × 8 = 16.

5. 4:5
Reasoning Keep red first; divide 4:5 by 1.

6. 3/4
Reasoning Total = 24; green fraction = 18/24 = 3/4.

7. 25 oaks and 20 pines
Reasoning 9 equal sections total; each section is 45 ÷ 9 = 5.

8. 12; 12
Reasoning Multiply both parts by 2 and by 2.

9. 10; 25
Reasoning Multiply both parts by 2 and by 5.

10. 6 square meters; aligned pairs (0,0), (3,2), (9,6)
Reasoning 9 ÷ 3 = 3 batches; 3 × 2 = 6.

11. Mix B
Reasoning For 25 cups water, A uses 30 cups juice; B uses 34. B has more juice per equal water amount.

12. (0,0), (5,4), (10,8), (30,24); 30 tickets earns $24
Reasoning Scale both quantities by each batch count; plot horizontal tickets and vertical dollars.

13. 12 oaks and 6 pines
Reasoning 9 equal sections total; each section is 18 ÷ 9 = 2.

14. 9/2 feet
Reasoning 3/2 × 3 = 9/2. Smaller units require more units for the same amount.

15. 150 centimeters
Reasoning 3/2 × 100 = 150. Smaller units require more units for the same amount.

16. 1 hours
Reasoning 60 ÷ 60 = 1; 1 hours = 60 minutes.

17. 7:4; 7/4 times as many
Reasoning Keep red first; divide 14:8 by 2.

18. 1/3; 1/2 or 1:2; the whole includes both colors
Reasoning Total = 36; green fraction = 12/36 = 1/3.

19. 18 oaks and 6 pines; difference 12
Reasoning 8 equal sections total; each section is 24 ÷ 8 = 3.

20. 8; 24
Reasoning Multiply both parts by 2 and by 6.