Rates and Percents

Unit 4 Test

Standards 6.RP.A.3a, 6.RP.A.3d, 6.RP.A.2, 6.RP.A.3b, 6.RP.A.3c

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 3; 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 rate units, reference wholes, and confusing percent with its decimal form.

Name _____ Date _____

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Standards assessed 6.RP.A.3a, 6.RP.A.3d, 6.RP.A.2, 6.RP.A.3b, 6.RP.A.3c

Questions 1–4 review Unit 3 (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] The ratio of oak trees to pine trees is 7:4. There are 44 trees altogether. Draw a tape diagram and find each count.

2. [Review] Draw aligned number lines for 4 liters of paint covering 5 square meters. Mark 0, one batch, and 2 batches. How much area do 8 liters cover?

3. [Review] The ratio of oak trees to pine trees is 3:2. There are 15 trees altogether. Draw a tape diagram and find each count.

4. [Review] Convert 9 feet to yards. Show the conversion ratio.

5. [Current unit] 4 identical notebooks cost $16. Find the cost per notebook.

6. [Current unit] 5 identical notebooks cost $35. Find the cost per notebook.

7. [Current unit] A cyclist travels 90 km in 6 hours at constant speed. Find the speed.

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8. [Current unit] A bus travels at 35 km/h. How long does 105 km take?

9. [Current unit] Pack A has 7 markers for $28; Pack B has 9 markers for $40.5. Find each unit price and the better buy.

10. [Current unit] Pack A has 5 markers for $20; Pack B has 8 markers for $36. Find each unit price and the better buy.

11. [Current unit] Write 30% as a simplified fraction and decimal.

12. [Current unit] Find 75% of 220.

13. [Current unit] Find 5% of 240.

14. [Current unit] 60 students are 60% of a school’s enrollment. Find the enrollment.

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Standards assessed 6.RP.A.3a, 6.RP.A.3d, 6.RP.A.2, 6.RP.A.3b, 6.RP.A.3c

15. [Current unit] 16 is what percent of 40? State which quantity is the reference whole.

16. [Current unit] 44 students are 20% of a school’s enrollment. Find the enrollment.

17. [Current unit] 5 identical notebooks cost $17.5. Find the cost per notebook and the cost of 8 notebooks at this rate.

18. [Current unit] 3 identical notebooks cost $12. Find the cost per notebook and the cost of 6 notebooks at this rate.

19. [Current unit] A cyclist travels 40 km in 1 hours at constant speed. Find the speed and the distance in 5 hours.

20. [Current unit] A bus travels at 20 km/h. How long does 70 km take?

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1. 28 oaks and 16 pines
Reasoning 11 equal sections total; each section is 44 ÷ 11 = 4.

2. 10 square meters; aligned pairs (0,0), (4,5), (8,10)
Reasoning 8 ÷ 4 = 2 batches; 2 × 5 = 10.

3. 9 oaks and 6 pines
Reasoning 5 equal sections total; each section is 15 ÷ 5 = 3.

4. 3 yards
Reasoning 9 ÷ 3 = 3; 1 yards = 3 feet.

5. $4 per notebook
Reasoning Unit rate = 16 ÷ 4 = 4 dollars per notebook.

6. $7 per notebook
Reasoning Unit rate = 35 ÷ 5 = 7 dollars per notebook.

7. 15 km/h
Reasoning Speed = 90 ÷ 6 = 15; distance = speed × time.

8. 3 hours
Reasoning Time = distance ÷ speed = 105 ÷ 35 = 3.

9. A $4/marker; B $4.5/marker; A is cheaper
Reasoning Divide each price by its marker count; compare 4 with 4.5.

10. A $4/marker; B $4.5/marker; A is cheaper
Reasoning Divide each price by its marker count; compare 4 with 4.5.

11. 3/10; 0.3
Reasoning 30% = 30/100 = 3/10; divide by 100 for 0.3.

12. 165
Reasoning 75/100 × 220 = 165.

13. 12
Reasoning 5/100 × 240 = 12.

14. 100
Reasoning Whole = 60 ÷ 3/5 = 100. Check 60% × 100 = 60.

15. 40%
Reasoning 16 ÷ 40 × 100 = 40%; the reference whole is 40.

16. 220
Reasoning Whole = 44 ÷ 1/5 = 220. Check 20% × 220 = 44.

17. $3.5 per notebook; $28
Reasoning Unit rate = 17.5 ÷ 5 = 3.5 dollars per notebook.

18. $4 per notebook; $24
Reasoning Unit rate = 12 ÷ 3 = 4 dollars per notebook.

19. 40 km/h; 200 km
Reasoning Speed = 40 ÷ 1 = 40; distance = speed × time.

20. 7/2 hours
Reasoning Time = distance ÷ speed = 70 ÷ 20 = 7/2.