Rational Numbers and Coordinates

Unit 5 Test

Standards 6.RP.A.3b, 6.RP.A.3c, 6.NS.C.5, 6.NS.C.6a, 6.NS.C.6c, 6.NS.C.7a, 6.NS.C.7b, 6.NS.C.7c, 6.NS.C.7d, 6.NS.C.6b, 6.NS.C.8

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 4; 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 order versus absolute value, coordinate order, and which sign changes in a reflection.

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Standards assessed 6.RP.A.3b, 6.RP.A.3c, 6.NS.C.5, 6.NS.C.6a, 6.NS.C.6c, 6.NS.C.7a, 6.NS.C.7b, 6.NS.C.7c, 6.NS.C.7d, 6.NS.C.6b, 6.NS.C.8

Questions 1–4 review Unit 4 (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] A cyclist travels 200 km in 5 hours at constant speed. Find the speed.

2. [Review] Pack A has 3 markers for $12; Pack B has 9 markers for $40.5. Find each unit price and the better buy.

3. [Review] Find 50% of 40.

4. [Review] Find 40% of 160.

5. [Current unit] A marker is 18 m above sea level. Write its signed elevation and explain what elevation 0 means.

6. [Current unit] Find the opposite of -7. Show both values on a number line.

7. [Current unit] Draw a horizontal or vertical number line. Plot and label -6, 0, and 6.

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8. [Current unit] Draw a horizontal or vertical number line. Plot and label -1/2, 0, and 3/2.

9. [Current unit] Compare -1 ___ -1/2 using <, >, or =. Sketch a number line to justify.

10. [Current unit] Compare -2/5 ___ -5/3 using <, >, or =. Sketch a number line to justify.

11. [Current unit] Find |-4| and compare it with |2|.

12. [Current unit] Find |-21| and compare it with |3|.

13. [Current unit] Plot P(4, 5) on a coordinate plane and name its quadrant.

14. [Current unit] Plot (-3, 7), reflect it across both axes, and give the reflected coordinates.

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15. [Current unit] Plot (3, -7) and (3, 7). Find their distance. Explain why adding magnitudes works or does not work for these points.

16. [Current unit] Plot (-6, 3) and (3, 3). Find their distance. Explain why adding magnitudes works or does not work for these points.

17. [Current unit] A marker is 16 m below sea level. Write its signed elevation and explain what elevation 0 means. Write the elevation of the point equally far on the opposite side of sea level.

18. [Current unit] Find the opposite of -7/5 and the opposite of that result. Locate all values on a number line.

19. [Current unit] Draw a horizontal or vertical number line. Plot and label -2/3, 0, and 4/3. Name the step size of your scale and explain the placement.

20. [Current unit] Draw a horizontal or vertical number line. Plot and label -2, 0, and 7/3. Name the step size of your scale and explain the placement.

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1. 40 km/h
Reasoning Speed = 200 ÷ 5 = 40; distance = speed × time.

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

3. 20
Reasoning 50/100 × 40 = 20.

4. 64
Reasoning 40/100 × 160 = 64.

5. +18 m; 0 means at sea level
Reasoning Sea level is the reference. Below is negative and above is positive.

6. 7
Reasoning -7 and 7 are each 7 units from 0 on opposite sides.

7. -6 < 0 < 6; unit steps
Reasoning Negative -6 is left of or below 0; 6 is right of or above 0. Use equal intervals.

8. -1/2 < 0 < 3/2; use steps of 1/4
Reasoning Negative -1/2 is left of or below 0; 3/2 is right of or above 0. Use equal intervals.

9. <
Reasoning -1 < -1/2; greater numbers lie farther right.

10. >
Reasoning -2/5 > -5/3; greater numbers lie farther right.

11. 4; 4 > 2
Reasoning -4 is 4 units from 0; distance is nonnegative.

12. 21; 21 > 3
Reasoning -21 is 21 units from 0; distance is nonnegative.

13. Quadrant I
Reasoning Move 4 right, then 5 up.

14. (3, -7)
Reasoning Reverse both signs: (3, -7).

15. 14 units
Reasoning Only one coordinate changes. Opposite sides of 0: 7 + 7 = 14.

16. 9 units
Reasoning Only one coordinate changes. Opposite sides of 0: 6 + 3 = 9.

17. -16 m; 0 means at sea level; opposite +16 m
Reasoning Sea level is the reference. Below is negative and above is positive.

18. 7/5; opposite again -7/5
Reasoning -7/5 and 7/5 are each 7/5 units from 0 on opposite sides.

19. -2/3 < 0 < 4/3; use steps of 1/3
Reasoning Negative -2/3 is left of or below 0; 4/3 is right of or above 0. Use equal intervals.

20. -2 < 0 < 7/3; use steps of 1/3
Reasoning Negative -2 is left of or below 0; 7/3 is right of or above 0. Use equal intervals.