Draw a Balance Beam Scale: Fulcrum, Sliding Weight, and Graduated Beam

Original tasks 1, 2 / complete keys

Task 1

Draw a balance beam scale with a 12 cm beam and 6 equal graduations. Place the fulcrum at the midpoint and the sliding weight at graduation 2 from the left. Label all three parts.

Answer: A drawing with a horizontal 12 cm beam, a centered fulcrum, a pointer at the midpoint, and a sliding weight at the second graduation from the left. Seven equal tick marks (six intervals of 2 cm) are numbered consistently, and labels are legible.

Reason: The beam midpoint is 6 cm from either end. Six graduations mean each interval is 2 cm. Graduation 2 from the left is 4 cm from the left end. The weight sits on the beam at that mark.

Check: Measure the beam length and divide by 6 to confirm equal intervals. Check that the fulcrum is at 6 cm and the weight is at 4 cm from the left end. Confirm labels are at least 0.5 cm tall.

Task 2

Draw a balance beam scale with a 9 cm beam and graduations every 1.5 cm. Place the sliding weight at the third graduation from the right. Use a trapezoidal fulcrum and label the pointer.

Answer: A drawing with a horizontal 9 cm beam, six equal intervals of 1.5 cm, a trapezoidal fulcrum centered at the midpoint, and a sliding weight at the third graduation from the right (4.5 cm from the right end). The pointer is labeled and centered.

Reason: Nine cm divided by 1.5 cm gives six intervals. The third graduation from the right is three intervals from the right end, or 4.5 cm from the right end. The fulcrum remains at the midpoint, 4.5 cm from either end.

Check: Count six intervals and confirm each is 1.5 cm. Measure 4.5 cm from the right end to locate the weight. Check that the trapezoidal fulcrum is symmetrical and the pointer is centered.

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Original tasks 3, 4 / complete keys

Task 3

Draw a balance beam scale with a 10 cm beam and a scale numbered from 0 at the center to 5 at each end. Place the sliding weight 2 cm to the right of center. Label the fulcrum and the graduated beam.

Answer: A drawing with a horizontal 10 cm beam, a centered fulcrum, and graduations numbered 0 at the center to 5 at each end. The sliding weight sits 2 cm to the right of center. Labels are legible.

Reason: A symmetric scale from 0 at the center to 5 at each end uses 1 cm intervals on a 10 cm beam, with a tick at the midpoint (5 cm) marked 0 and ticks at 1 cm spacing outward to 5 at each end, giving 11 ticks total. Two cm to the right of center is graduation 2 on the right side. The fulcrum stays at the midpoint.

Check: Confirm the center tick is 0 and each side reaches 5, with 11 ticks at 1 cm spacing. Measure 2 cm to the right of center for the weight. Check that the fulcrum is centered and labels are clear.

Task 4

Draw a balance beam scale with an 8 cm beam and 4 equal graduations. Place the fulcrum at the midpoint and the sliding weight at graduation 3 from the left. Add a ground line and a direction arrow for the sliding weight.

Answer: A drawing with a horizontal 8 cm beam, four equal intervals of 2 cm, a centered fulcrum, and a sliding weight at graduation 3 from the left. A ground line and a small arrow show the weight can slide.

Reason: Eight cm divided by 4 gives 2 cm intervals. Graduation 3 from the left is 6 cm from the left end. The fulcrum is at 4 cm. The arrow indicates sliding motion along the beam.

Check: Measure four intervals of 2 cm each. Confirm the weight is at 6 cm from the left and the fulcrum is at 4 cm. Check that the ground line is horizontal and the arrow points along the beam.

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Source rubric / reflection

- [ ] Beam is horizontal and centered within the drawing area.
- [ ] Fulcrum is symmetrical and centered at the beam midpoint.
- [ ] Pointer is centered and extends downward from the beam midpoint.
- [ ] Sliding weight sits on the beam and is clearly separate from it.
- [ ] Graduations are evenly spaced and numbered consistently.
- [ ] Labels for fulcrum, sliding weight, and graduated beam are legible.
- [ ] Handwriting is consistent; x-height is measured from baseline to midline.
- [ ] Valid alternatives such as triangular or trapezoidal fulcrums and block or rounded weights are accepted.

Reflection: What did you check, what did you change, and what will you try next?