Draw a Weighing Scale: Dial, Platform, and Weights

Original tasks 1, 2, 3 / complete keys

Task 1

Draw a scale with a dial diameter of 3 cm, a platform 6 cm wide and 1 cm tall, and a 1.5 cm gap between dial and platform. Add two weights labeled 2 kg and 1 kg. State the total labeled weight.

Answer: Total labeled weight is 3 kg. The dial is 3 cm across, the platform is 6 cm wide, and the gap is 1.5 cm. The two weights are placed side by side on the platform.

Reason: The total is the sum of the labels: 2 kg plus 1 kg equals 3 kg. The platform is twice the dial diameter, so it is wider than the dial as required.

Check: Measure the dial diameter and platform width with a ruler; confirm the platform is wider. Add the labels and confirm the sum is 3 kg. Check that both weights rest fully on the platform.

Task 2

A drawing has a dial diameter of 4 cm and a platform width of 3 cm. Identify the proportion problem and give a corrected platform width using the same units.

Answer: The platform is narrower than the dial. A corrected platform width is 8 cm, which is twice the dial diameter.

Reason: The convention requires the platform to be wider than the dial so the scale reads as a support. Doubling the dial diameter gives a clear margin on both sides.

Check: Compare the two measurements: 3 cm is less than 4 cm, so the platform is too narrow. After correction, confirm 8 cm is greater than 4 cm and that the platform remains centered on the center line.

Task 3

Draw a dial with a center cross and a pointer of length 1 cm inside a dial of radius 2 cm. Add four tick marks. Explain why the pointer length is acceptable.

Answer: The pointer is acceptable because 1 cm is less than the 2 cm radius, so it stays inside the dial rim.

Reason: The pointer must not touch or cross the rim. A length shorter than the radius leaves a gap. Four tick marks are within the suggested four to eight range.

Check: Measure the pointer from the center cross and compare it with the radius. Confirm the pointer end is at least 1 cm from the rim in this example. Count the tick marks and confirm there are four.

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Original tasks 4 / complete keys

Task 4

A scale drawing shows three weights labeled 1 kg, 0.5 kg, and 0.25 kg, but the 0.25 kg weight hangs over the platform edge by 0.5 cm. Describe the fix and state the total labeled weight after the fix.

Answer: Move the 0.25 kg weight inward until its whole base rests on the platform. The total labeled weight remains 1.75 kg.

Reason: Moving a weight does not change its label, so the sum stays the same: 1 plus 0.5 plus 0.25 equals 1.75 kg. The fix addresses placement, not value.

Check: Check that no part of any weight extends beyond the platform edge. Add the three labels and confirm the sum is 1.75 kg. Confirm the gaps between weights are still visible.

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Source rubric / reflection

- [ ] Dial is present, clearly circular or acceptably oval, with a marked center.
- [ ] Pointer starts at the center mark and stays inside the dial rim.
- [ ] Platform is present, horizontal, and wider than the dial.
- [ ] At least two weights rest fully on the platform with visible gaps.
- [ ] Each weight has a readable label or a leader line to a clear label.
- [ ] Construction lines are light or erased, and main outlines are firm.
- [ ] Valid alternatives such as rounded platform corners or cylindrical weights are accepted if parts remain identifiable.

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