

Hanging in the Balance

SOLUTIONS TO THE ACTIVITY SHEET

For each mathematical solution, multiply the number of weights at the location from the fulcrum by their distance from the fulcrum (number of weights \times distance). Compare the sums for each side of the balance scale.

1. Tilt left; $(1 \times 3) + (2 \times 2) > 1(1 + 2)$
2. Tilt left; $(3 \times 3) > (3 \times 2)$
3. Tilt left; $2(3 + 2) > (2 \times 4)$
4. Tilt left; $(3 \times 3) > (2 \times 1) + (3 \times 2)$
5. Balance; $(3 \times 2) = (6 \times 1)$
6. Equal sign; it means *same as*, although some students think this sign means *equals* or the answer.

7. a. 8; although answers of 12 will be common

b. 56; although answers of 150 will be common

c. 23; although answers of 39 will be common

8. Most students will say, “Yes, the same number goes into the box,” because they do not read the entire equation.

9. The letter n is an unknown value or number; watch for students who do not know that this is a multiplication problem or who think that the n refers only to the units place value.

10. Unable to determine; watch for students who think the multiplication problem is larger.

SOLUTIONS TO THE APPENDIX

1. a. Tilt left; $(3 \times 3) > (2 \times 1) + (3 \times 2)$

b. Tilt left; $2(4 + 3) > (2 \times 5)$

c. Balance; $(3 \times 2) = (6 \times 1)$

2. Equal sign; same as, or balance

3. Answers will vary, but they will need to be greater than $(3 \times 4) + (1 \times 2)$, or 14.

4. Answers will vary, but they will need to be equal to $(3 \times 4) + (1 \times 2)$, or 14.

5. Before removing any weights, we have $(3 \times 2) + (1 \times 1) < 2(1 + 3)$. Remove one weight from the third peg on the right to tilt the balance to the left.

Hanging in the Balance

Name _____

APPENDIX: POSTTEST

1. Indicate whether the scale would *balance*, *tilt left*, or *tilt right*, then write why you chose that answer.

a. _____



Explanation:

b. _____



Explanation:

c. _____



Explanation:

2. What is the meaning of the “=” sign?

3. Create a solution for the right-hand side that would cause the scale to *tilt right*.



Explanation:

4. Other than creating a mirrored answer, write a solution for the right-hand side that will create a balanced scale. Explain why you chose that solution.



Explanation:

5. Remove one weight so that the balance *tilts left*.



Explanation: