Proportional Reasoning Evaluation

A solution is only considered correct if both the answer and the explanation are correct. Please show all work for obtaining your solution. Give all answers on the answer sheet. Do <u>not</u> write on the question sheet.

1. Lisa and Rachel drove equally fast along a country road. It took Lisa 6 min. to drive 4 miles. How long did it take Rachel to drive six miles?

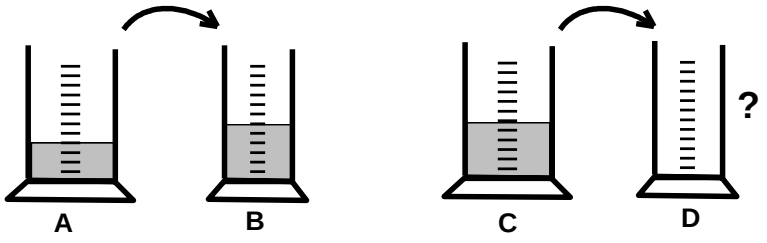
2. Anne and Linda are using different road maps of a city. On Anne's map a road 3 inches long is really 15 miles long. On Linda's map a road 9 inches long is really 45 miles long. Who is using a larger city map?
   a. Anne
   b. Linda
   c. Their maps are the same
   d. Not enough information is provided

3. If Nick mixed less lemonade mix with more water than he did yesterday, his lemonade drink would taste
   a. Stronger
   b. Weaker
   c. Exactly the same
   d. Not enough information

4. If Nick mixed more lemonade mix with more water than he did yesterday, his lemonade drink would taste
   a. Stronger
   b. Weaker
   c. Exactly the same
   d. Not enough information

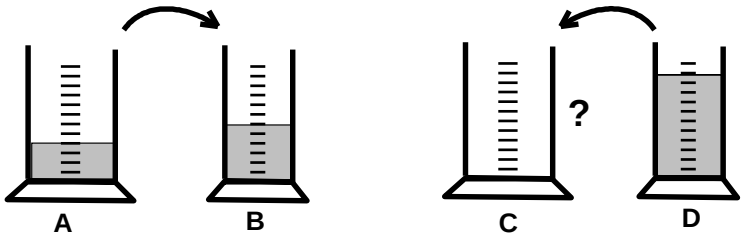
5. Two friends hammered a line of nails into different boards. Bill hammered more nails than Greg. Bill's board was shorter than Greg's. On which board are the nails hammered closer together?
   a. Bill's board
   b. Greg's board
   c. The nails are equally spaced
   d. Not enough information

6. Water was poured in a wide cylinder up to the fourth mark (figure A). This water was transferred into the narrow cylinder and the water rose to the sixth mark (Figure B). If the water in the wide cylinder is at the 6th mark (fig C) how high will the water rise if it were poured into the Narrow cylinder (Figure D)?



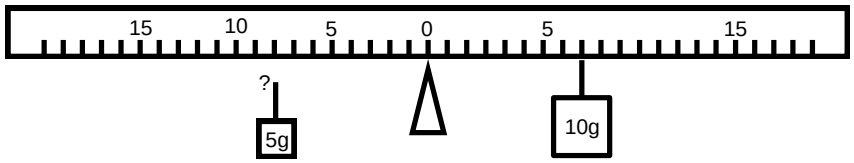
   a. 7
   b. 8
   c. 9
   d. 10
   e. Other
   f. Not enough information

7. You use the same cylinders as in the previous question. If the water is poured into the narrow cylinder up to the eleventh mark (figure D), how high will the water rise if it were poured into the wide cylinder (figure C)



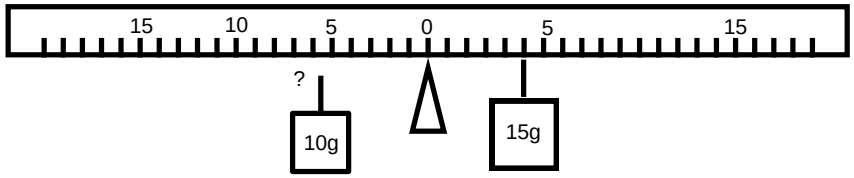
a. 5 1/3
b. 5 2/3
c. 7 1/3
d. 7 ½
e. 8
f. 8 ½
g. 9
h. Other
i. Not enough information

8. A balance beam has two hanging weights. A 10 g weight was hung 7 cm from the center on the right. Where would you hang a 5 g weight on the left side to make the beam balance?



a. Between 3& 4 cm
b. 7 cm
c. 12 cm
d. 14 cm
e. At the end
f. Not enough information

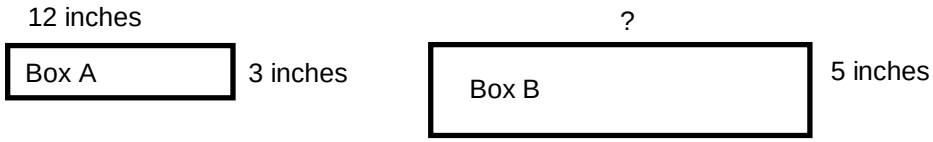
9. A 15 g weight is hung 4 cm from the center on the right. Where would you hang a 10 g weight on the left to balance the beam?



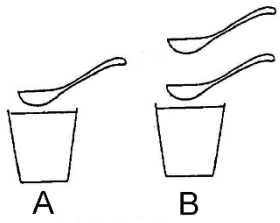
a. 5 cm
b. 6 cm
c. Between 6& 7 cm
d. 7 cm
e. 8 cm
f. 9 cm
g. 15 cm
h. Not enough information

10. Bill was 7 years old when his brother was 3 years old. How old is Bill when his brother is 16?

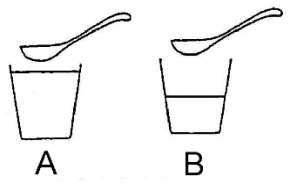
11. Box A has the following dimensions. Determine the length of similar box B.



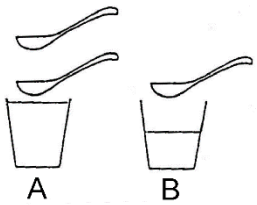
12. Cup A and cup B are both full of water. To cup A one spoonful of sugar was added and to cup B two spoonfuls of sugar were added. Which of the cups is sweeter, or is the sweetness of both cups the same?



13. Cup A is full of water and cup B half full of water. To cup A one spoonful of sugar was added and to cup B one spoonful of sugar was added. Which of the cups is sweeter, or is the sweetness of both cups the same?



14. Cup A is full of water and cup B half full of water. To cup A two spoonfuls of sugar were added and to cup B one spoonful of sugar was added. Which of the cups is sweeter, or is the sweetness of both cups the same?



15. Valerie has a ruler that is broken so about the first 1½ inches are missing. When she measured her book the left end of the book is at 2 inches and the right end is at 7½ inches. She moves the ruler so the right end is at 9 inches. Where will the left end be located?

16. Robert is measuring some pictures using paper clips. He has both large and small paper clips. He finds that a man is 4 large paper clips high. But the same man measures 6 small paper clips high. Robert measures a house and finds that it is 10 large paper clips high. What result would he get if he measured the house using small paper clips?

    Now Robert measures a book and it is 20 small paper clips wide. If he measures the book with large paper clips, how many would he have to use?

Mathematical Reasoning Answer Sheet

Name: _____ Result: _____ Date: _____

A solution is only considered correct if both the answer and the explanation are correct. Please show all work for obtaining your solution. Give all answers on this sheet.

1. Answer: _____
   Explain, show work:

2. Answer: a. b. c. d. Circle the correct answer
   Explain, show work:

3. Answer: a. b. c. d.
   Explain, show work:

4. Answer: a. b. c. d.
   Explain, show work:

5. Answer: a. b. c. d.
   Explain, show work:

6. Answer: a. b. c. d. e. f.
   Explain, show work:

7. Answer: a. b. c. d. e. f. g. h. i.
   Explain, show work:

8. Answer: a. b. c. d. e. f.
Explain, show work:

9. Answer: a. b. c. d. e. f. g. h.
Explain, show work:

10. Answer: _____
Explain, show work:

11. Answer: _____
Explain, show work:

12 Answer: _____
Explain, show work:

13. Answer: _____
Explain, show work:

14. Answer: _____
Explain, show work:

15. Answer: _____
Explain, show work:

16. Answer: _____ small paper clips
Explain, show work:

Answer: _____ large paper clips
Explain, show work:

Mathematical Reasoning KEY

1. 9 min
2. C
3. B
4. D
5. A
6. C
7. D
8. D
9. B
10. 20
11. 20 inches
12. B is sweeter
13. B is sweeter
14. Both are same
15. 3 ½ inches
16. 15
    13 1/3 or 14

Scoring for each question:

0 = incorrect response to the task

1 = correct response by guessing or with no justification through showing of work or explanation

2 = correct response with one component of explanation or manipulations that occur by chance

3 = correct response with a prescribed algorithm or correct solution with incomplete explanation

4 = correct solution or the correct response along with the correct justification (interpretation)