CPM 1.2.2

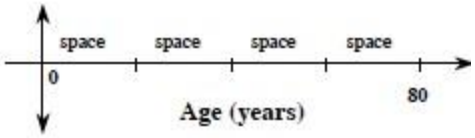
METHODS AND MEANINGS

MATH NOTES

Scaling a Graph

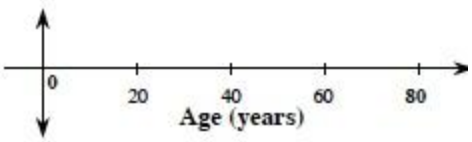
The numbers on each axis of a graph or a number line show the **scaling** of the axes. The difference between consecutive markings tells the size of the **interval**. When you scale each axis, you must use equal intervals to represent the data accurately. For example, an interval of 5 creates a scale numbered −15, −10, −5, 0, 5, 10, 15, etc. Unequal intervals distort the relationship in the data.

Notice on the graph at right that 80 marks the end of the *fourth* interval from zero. If you divide 80 years by 4 you can see the length of an interval on this graph is 20.



$$80 \div 4 = 20$$

The second graph at right has each interval labeled. Labeling the graph this way is called “scaling the axis.”



Review & Preview

1-70. Imagine that you have a bag containing 10 marbles of different colors. You have drawn a marble, recorded its color, and replaced it fifty times, with the following results: 9 purple, 16 orange, 6 yellow, and 19 green marbles. Make a prediction for how many marbles of each color are in the bag. Show all of your work or explain your reasoning. 1-70 HW eTool (CPM). Homework Help ✎

1-71. A fair number cube with the numbers 1, 2, 3, 4, 5, and 6 is rolled. Homework Help ✎

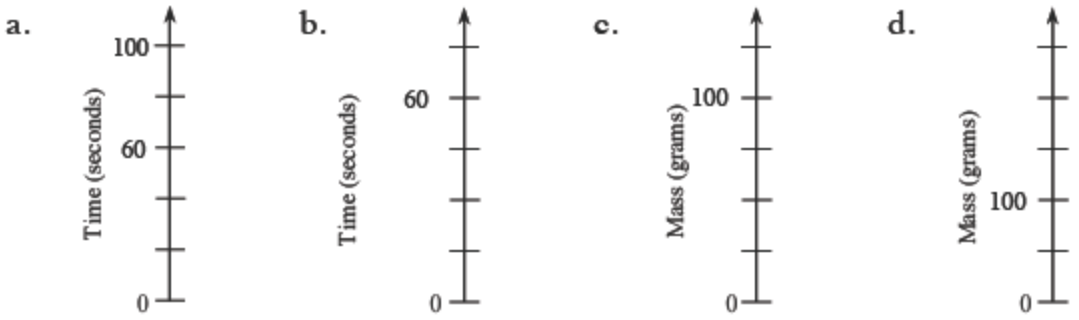
a. What is the probability of getting an even number?

b. What is the probability of getting a factor of 6?

1-72. Ramon is saving $7.75 per week to buy a new cell phone. The phone he wants costs $125.00. For how many weeks will he need to save his money? First, estimate your answer. Then figure out the actual number of weeks. Homework Help ✎

1-73. If 18 inches is equal to $1\frac{1}{2}$ feet, how many feet is a 36-inch board? A 72-inch board? A 144-inch board? Homework Help ✎

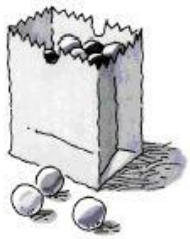
1-74. Read this lesson's Math Notes box about scaling axes. Then, on your paper, copy the incomplete axes below and write the missing numbers on each one. Homework Help ✎



CPM 1.2.2 Homework Help

Show Lessons

1-70. Imagine that you have a bag containing 10 marbles of different colors. You have drawn a marble, recorded its color, and replaced it fifty times, with the following results: 9 purple, 16 orange, 6 yellow, and 19 green marbles. Make a prediction for how many marbles of each color are in the bag. Show all of your work or explain your reasoning.



Click the bag in the eTool below to draw a marble.
Click the link at right for the full version of the eTool: 1-70 HW eTool

Show Lessons

1-71. A fair number cube with the numbers 1, 2, 3, 4, 5, and 6 is rolled.

a. What is the probability of getting an even number?

Hint (a):

How many even numbers are there on the cube? How many possibilities are there for what can be rolled?

Answer (a):

There are 3 even numbers (2, 4, 6) and 6 possibilities, so the probability of rolling an even number is

$\frac{3}{6}$ or $\frac{1}{2}$

b. What is the probability of getting a factor of 6?

Hint (b):

Follow the same steps as outlined in part (a).

More Help (b):

1, 2, 3, and 6 are all factors of six.

Show Lessons

1-72. Ramon is saving \$7.75 per week to buy a new cell phone. The phone he wants costs \$125.00. For how many weeks will he need to save his money? First, estimate your answer. Then figure out the actual number of weeks.

Hint:

Remember that your estimate could be a natural, or counting, number such as 1, 2, 3, 4... Try rounding \$7.75 up and \$125.00 down.

To find the actual number of weeks Ramon must save, use division and round your number up to the closest natural number.

Answer:

Your estimate could be about 15 weeks, but Ramon will actually need to save for 17 weeks.

Show Lessons

1-73. If 18 inches is equal to $1\frac{1}{2}$ feet, how many feet long is a 36-inch board? A 72-inch board? A 144-inch board?

Hint:

First, you can figure out the relationship between 18 and 36, then 18 and 72, then 18 and 144. With this information, it will be easier to solve for number of feet. Or, you can find the number of inches in one foot first.

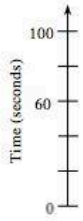
More Help:

36 is 2 times 18. To find how many feet 36 inches is, you would need to multiple 1.5 by 2, since 1.5 is equal to 18 inches. Use this information to help you with the rest of the problem.

Show Lessons

1-74. Read this lesson's Math Notes box about scaling axes. Then, on your paper, copy the incomplete axes below and write the missing numbers on each one.

a.

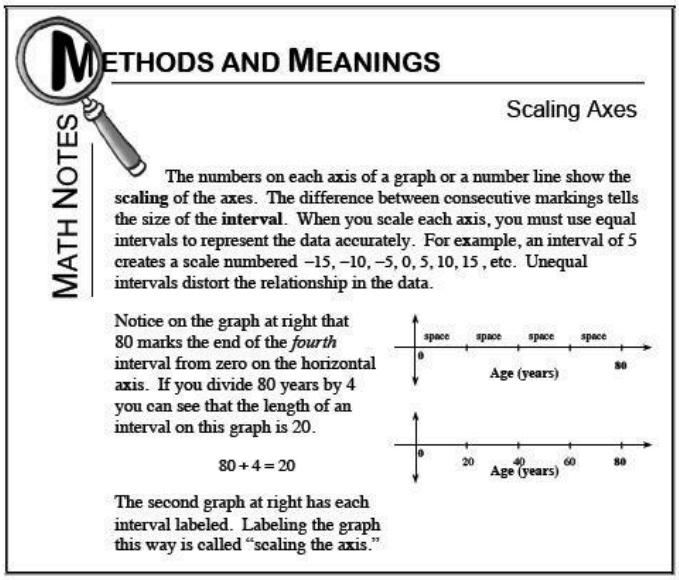


Hint (a):

Here is the math notes box for this lesson.

More Help (a):

Look at the two ticks labeled 60 and 100. What is the difference of 60 and 100? How many spaces are between them?



METHODS AND MEANINGS

MATH NOTES

Scaling Axes

The numbers on each axis of a graph or a number line show the **scaling** of the axes. The difference between consecutive markings tells the size of the **interval**. When you scale each axis, you must use equal intervals to represent the data accurately. For example, an interval of 5 creates a scale numbered −15, −10, −5, 0, 5, 10, 15 , etc. Unequal intervals distort the relationship in the data.

Notice on the graph at right that 80 marks the end of the *fourth* interval from zero on the horizontal axis. If you divide 80 years by 4 you can see that the length of an interval on this graph is 20.

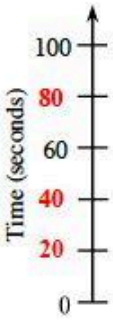
$$80 \div 4 = 20$$

The second graph at right has each interval labeled. Labeling the graph this way is called "scaling the axis."

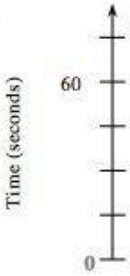
1-74 Homework Help Continued

Answer (a):

See the number line below.



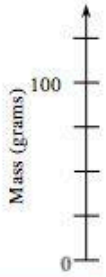
b.



Hint (b):

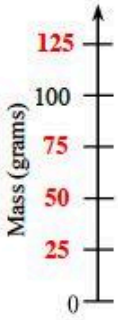
See part (a).

c.

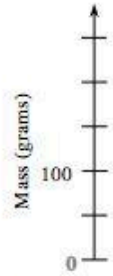


Answer (c):

See the number line below.



d.



Hint (d):

See part (a).