Graphing Ratios

Graphing ratios: Models and calculations

Name _____ **Date** _____ **Score** _____ / 6

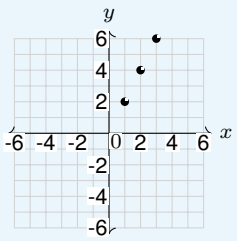
QUICK REVIEW

Put the first quantity on the horizontal axis and the second on the vertical axis. If $y = 2x$, the ratio pairs $(0, 0), (1, 2), (2, 4)$ lie on a straight line through the origin. Plot x first, then y.

Worked example

For $y = 2x$, list the pairs for $x = 1, 2, 3$ and plot them.

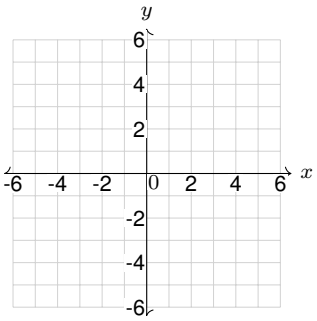
1. Use $y = 2x$: $y = 2 \times 1 = 2$ for $x = 1$.
2. For the other inputs, $y = 2 \times 2 = 4$; $y = 2 \times 3 = 6$.
Include $(0, 0)$ because both quantities start at zero.
Answer: $(1, 2), (2, 4), (3, 6)$.



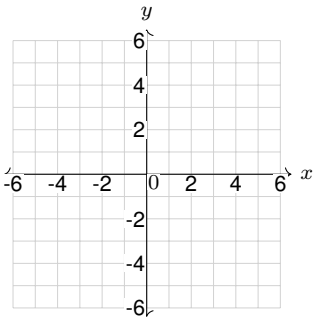
Practice Problems

Show your thinking.

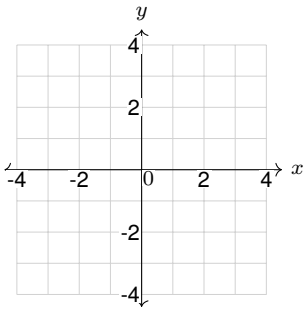
1. Calculate and graph $y = 2x$ for $x = 0, 1, 3$.



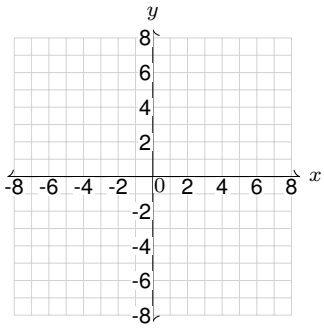
2. Graph water y cups for concentrate x cups when water:concentrate is $3 : 1$.



3. Graph 1 ticket per dollar: dollars on x, tickets on y.

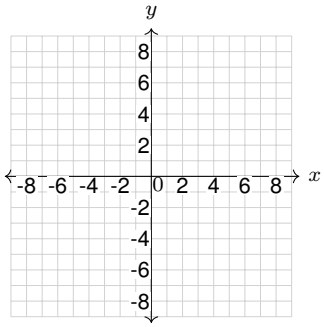


4. Complete and graph the ordered pairs for 2 wheels per bicycle, with $1, 2, 4$ bicycles.



5. A ratio graph contains $(2, 6)$ and $(3, 9)$. Find y when $x = 1$ and explain why the origin belongs.

6. Graph the ratio $x : y = 1 : 3$ for $x = 0, 1, 3$.



Answer Key

1. $(0, 0), (1, 2), (3, 6)$.
2. $(0, 0), (1, 3), (2, 6)$.
3. $(0, 0), (2, 2), (4, 4)$.
4. $(1, 2), (2, 4), (4, 8)$.
5. $y = 3$; include $(0, 0)$.
6. $(0, 0), (1, 3), (3, 9)$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Use $y = 2x$: $y = 2 \times 0 = 0$ for $x = 0$.
2. For the other inputs, $y = 2 \times 1 = 2$; $y = 2 \times 3 = 6$. Include $(0, 0)$ because both quantities start at zero.

Problem 2

1. Use $y = 3x$: $y = 3 \times 0 = 0$ for $x = 0$.
2. For the other inputs, $y = 3 \times 1 = 3$; $y = 3 \times 2 = 6$. Include $(0, 0)$ because both quantities start at zero.

Problem 3

1. Use $y = 1x$: $y = 1 \times 0 = 0$ for $x = 0$.
2. For the other inputs, $y = 1 \times 2 = 2$; $y = 1 \times 4 = 4$. Include $(0, 0)$ because both quantities start at zero.

Problem 4

1. Use $y = 2x$: $y = 2 \times 1 = 2$ for $x = 1$.
2. For the other inputs, $y = 2 \times 2 = 4$; $y = 2 \times 4 = 8$. Include $(0, 0)$ because both quantities start at zero.

Problem 5

1. $6/2 = 3$ and $9/3 = 3$, so $y = 3x$.
2. $3 \times 1 = 3$ and $3 \times 0 = 0$, giving $(1, 3)$ and $(0, 0)$.

Problem 6

1. Use $y = 3x$: $y = 3 \times 0 = 0$ for $x = 0$.
2. For the other inputs, $y = 3 \times 1 = 3$; $y = 3 \times 3 = 9$. Include $(0, 0)$ because both quantities start at zero.

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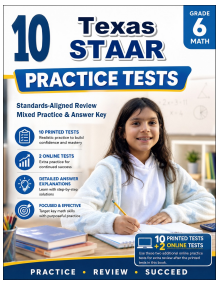

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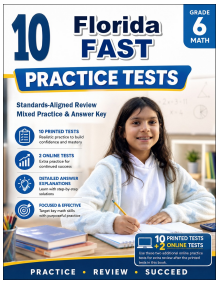

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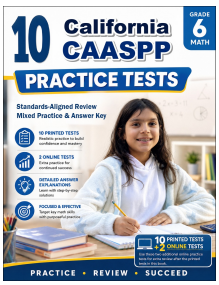

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