


cameas
/transi-
tions
Audio

Alicia is singing + dancing along to vious t femps medium shot


00:02:43:00


| Action/ |
| :---: | :---: |
| Plot |
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$$
\frac{f}{b}
$$ wide shot

interview voiceover
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## Matching Equations \& Graphs

 Refer to Section 4.4
## Notes:

When we are given a graph and need to match it to an equation, we create tables of values based on the equations. These tables of values will give us coordinates. Which ever equation produces coordinates that equal the coordinates of the graph, is the matching equation.

## Example:

Match each equation with a graph on this grid.
a) $y=2 x-1$
b) $y=-x+4$
c) $y=3 x-3$


$$
y=2 x-1
$$

$y=-x+4$
$y=3 x-3$


## FOCUS

- Match equations and graphs of linear relations.



## Gonnect

The 3 graphs below have these equations, but the graphs are not in order:
$y=3 x+3 \quad x+y=3 \quad y=3 x-3$


For $x+y=3$

Substitute: $x=0$

| $0+y$ | $=3$ |
| ---: | :--- |
| $y$ | $=3$ |

 The graph :


So, the equation $y=3 x-3$ must match Graph B. Substitute to check.
Substitute: $x=0$

$y=3(1)^{\text {TIME }} 3$
$y=0$
One point is: $(1,0)$

Substitute: $x=2$
$y=3(2)-$
$y=3$



## Example 1 Matching Equations with Graphs that Pass through the Origin

Match each graph on the grid with its equation below.


A Solutions
Rewrite $y_{\text {tume }}^{\text {tion }}$
the pattern of
In the equation $y=1 x$, the 1 indicates that
$x$ increases by 1 unit, $y$ also increases 1 unit.
A Solutions
Rewrite $y=10$
the pattern of
In the equation $y=1 x$, the 1 indicates that
$x$ increases b 1 unit, $y$ also increases 1 unit.
A Solutions
Rewrite $y=1$,
the pation
thern of
In the equation $y=1 x$, the 1 indicates that
$x$ increases by 1 unit, $y$ also increases 1 unit. This matche Graph C.
In the equation $y=2 x$, the 2 indicates that when $x$ increases b 1 unit, $y$ increases by 2 units
This matche Graph A.
In the equlatation $y=-3 x$, the -3 tells us that when $x$ increases, cis This matche $\underset{\text { Ausio }}{ }$ Graph B.


$$
\begin{aligned}
& y=x \\
& y=2 x \\
& y=-3 x
\end{aligned}
$$




## Example 2 Identifying a Graph Give中 Its Equation

Which graph on this grid has the equation $y=3 x-4$ ?
Justify the answer.


## A Solution

Pick 2 points on each graph and check to see if their coordinates satisfy the equation.


Discuss
the fa\&s

1. When we match an equation to a graph by determining coordinates of points on the graph, why is it helpful to check 3 points, even though 2 points are enough to identify a line?
2. When we choose points on a graph to substitute their coordinates in an equation, what is an advantage of choosing the points where the graph intersects the axes? Practice

## Check

3. Match each equation with a graph below.

i)
ii)



iii)


Apply
5. Match each:equation with a graph below:

ii)

iii)

6. Matchrieach equation with a graph below Justifympour a swerṣ.
a) $x+y=4 \quad$ b) $x-y=4 \quad$ c) $x-y$

7. Match each equation with its graph below. Explain your strategy.
a) $y=2 x$
b) $2 y=7$
c) $3 y=2$



10. a) Write the equations of 3 different lines.
b) Graph the lines on the same grid. Write the equations below the grid.
c) Trade grids with a classmate. Match your classmates' graphs and equations.
11. Assessment Focus
a) How are these 4 graphs alike?

b) How are the graphs different?
c) Match each graph to its equation.
i) $y=2 c-2$
ii) $y_{\text {Acion }} 3 x+4$
iii) $2 x^{\text {Plot }}$ leses $y=6$
iv) $2 x \substack{\text { cimemes } \\ \text { tions }} y=-1$
d) Did you ause the same strategy each time?
If your annswe is yes, what strategy did you use a 1 d why?
If your answer is no, explain why you used diff $f$ rent strategies.
Show your work.

## Reflect

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tions
What strana egies have you learned to match an equation with its graph?
When might you use each strategy? Include examples in your explanation.
a) DE
b) DG
) EF
d) FG

