Parallel Lines and Points of Intersection (Solutions)

1. What is the equation of a line travelling parallel to one defined by the rule \( y = -5x + 2 \), but that passes through point \((-6, -5)\) instead?

2. What is the equation of a line travelling parallel to one defined by the rule \( 2y = 7x + 10 \), but that passes through point \((6, 11)\)?
Parallel Lines and Points of Intersection (solutions)

1. What is the equation of a line travelling parallel to one defined by the rule $y = -5x + 2$, but that passes through point $(-6, -5)$ instead?

   \[ y = a \times + b \]
   \[ y = -5 \times + b \]
   \[ -5 = -5(-6) + b \]
   \[ -5 = 30 + b \]
   \[ -30 = -30 \]
   \[ -35 = b \]

   Answer:
   \[ y = -5x - 35 \]

2. What is the equation of a line travelling parallel to one defined by the rule $2y = 7x + 10$, but that passes through point $(6, 11)$?

   \[ y = a \times + b \]
   \[ y = 3.5 \times + b \]
   \[ 11 = 3.5(6) + b \]
   \[ 11 = 21 + b \]
   \[ -21 = -21 \]
   \[ -10 = b \]

   Answer:
   \[ y = 3.5x - 10 \]
3. What is the equation of a line travelling \textit{parallel} to one defined by the rule $4y + 10x - 32 = 0$, but that passes through point $(-12, 40)$?

4. Lines AB and CD are \textit{parallel}.
What is the equation of line CD?
3. What is the equation of a line travelling parallel to one defined by the rule $4y + 10x - 32 = 0$, but that passes through point $(-12, 40)$?

\[ y = a \cdot x + b \]

STEP (2)

\[ 40 = -2.5(-12) + b \]

STEP (3)

\[ 40 = 30 + b \]

\[ 10 = b \]

**Answer:**

\[ y = -2.5x + 10 \]

4. Lines $AB$ and $CD$ are parallel. What is the equation of line $CD$?

**Answer:**

\[ y = 4.5x + 16 \]
5. Which of the following statements about the system of equations below is true?

Eq. 1) \(4y = 16x - 20\) \hspace{2cm} Eq. 2) \(7y + 28x - 35 = 0\)

A) The system has one solution \hspace{2cm} C) The system has no solutions
B) The system has two solutions \hspace{2cm} D) The system has infinite solutions

6. Which of the following statements about the system of equations below is true?

Eq. 1) \(3y = 18x - 9\) \hspace{2cm} Eq. 2) \(6y - 36x - 9 = 0\)

A) The system has one solution \hspace{2cm} C) The system has no solutions
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7. Megan and Kelly both work at the same law firm. They each earn the same hourly wage, but Megan’s base salary is slightly higher than Kelly’s.

Kelly’s weekly income can be represented by the rule: $2y = 250x + 500$
If Megan works for 30 hours, she earns $4225.00

How much greater is Megan’s base salary than Kelly’s?
7. Megan and Kelly both work at the same law firm. They each earn the same hourly wage, but Megan’s base salary is slightly higher than Kelly’s.

Kelly’s weekly income can be represented by the rule: \(2y = 250x + 500\)
If Megan works for 30 hours, she earns $4225.00

How much greater is Megan’s base salary than Kelly’s?

Megan’s ‘\(b\)’ value is greater than Kelly’s.

**Step 1**: Kelly

\[
2y = 250x + 500
\]
\[
y = 125x + 250
\]

**Step 2**: Megan

\[
y = a + b
\]
\[
4225 = 125(30) + b
\]
\[
4225 = 3750 + b
\]
\[
b = 475
\]

**Step 4**:

Kelly’s base salary (‘\(b\)’) is $250

Megan’s base salary (‘\(b\)’) is $475

\[
\text{Difference} = 475\$ - 250\$
\]
\[
\text{Difference} = 225\$
\]

**Answer**: Megan’s base salary is 225\$ greater than Kelly’s.