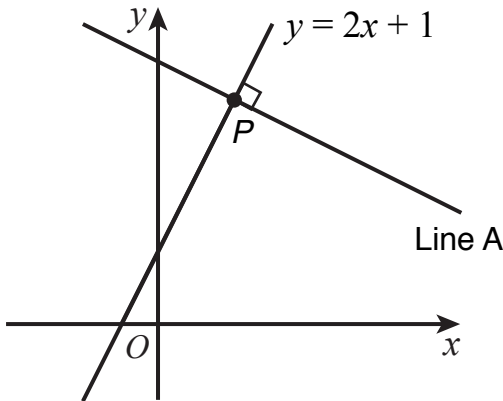


Perpendicular lines: equations 1

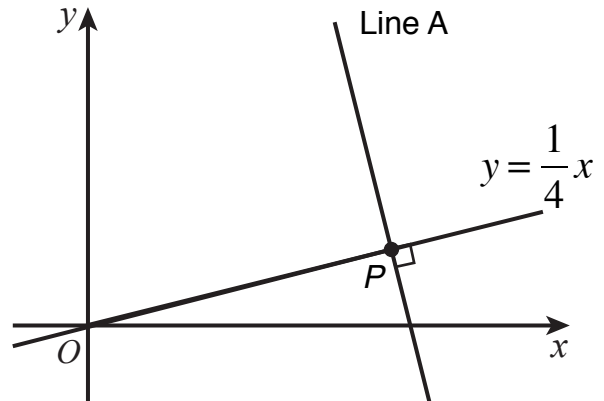


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- 1 Here are two perpendicular lines.
Point P has coordinates $(1, 3)$



- 2 Here are two perpendicular lines.
Point P has coordinates $(1, 4)$



- 1a Calculate the gradient of Line A.

$$\frac{\boxed{2}}{\boxed{1}} \times \frac{\boxed{}}{\boxed{}} = -1$$

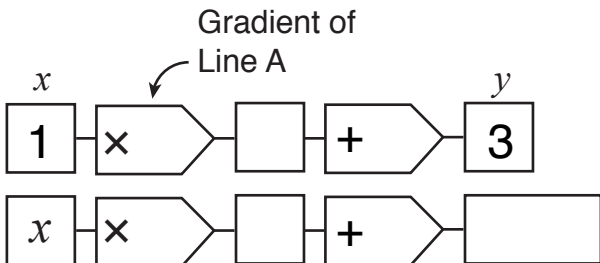
Gradient of $y = 2x + 1$ Gradient of Line A

- 2a Calculate the gradient of Line A.

$$\frac{\boxed{1}}{\boxed{4}} \times \frac{\boxed{}}{\boxed{}} = -1$$

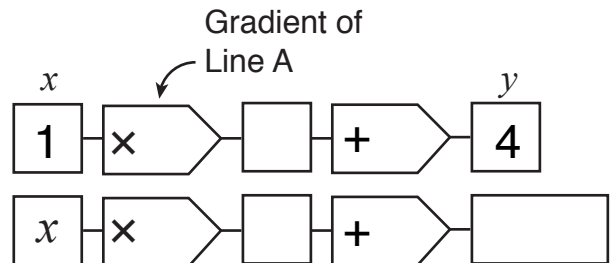
Gradient of $y = \frac{1}{4}x$ Gradient of Line A

- 1b Use your answer to 1a to find the equation of Line A.



Equation of Line A: $y = \underline{\hspace{2cm}}$

- 2b Use your answer to 1a to find the equation of Line A.

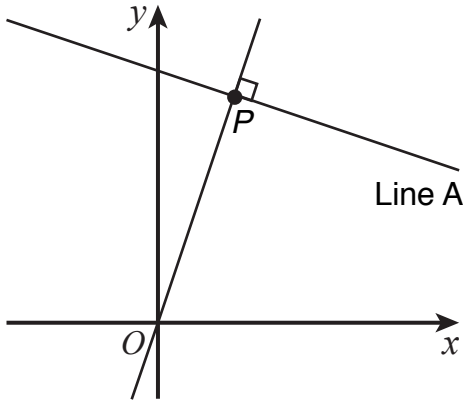


Equation of Line A: $y = \underline{\hspace{2cm}}$

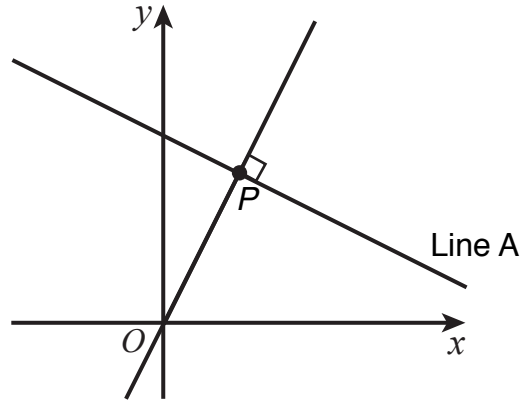
Perpendicular lines: equations 2

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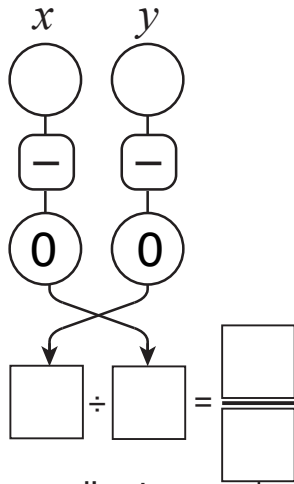
1 Here are two perpendicular lines. Point P has coordinates (1, 4)



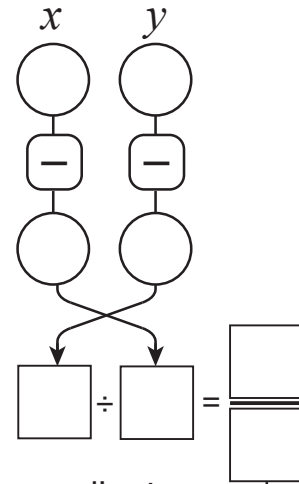
2 Here are two perpendicular lines. Point P has coordinates (1, 2)



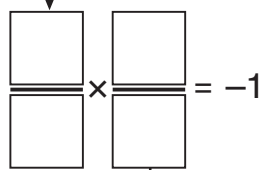
1a Calculate the gradient of OP.



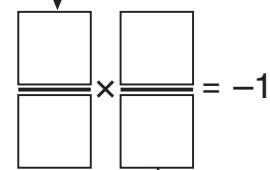
2a Calculate the gradient of OP.



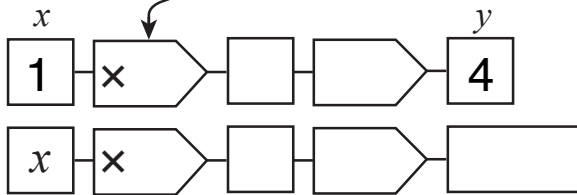
1b Calculate the gradient of Line A.



2b Calculate the gradient of Line A.

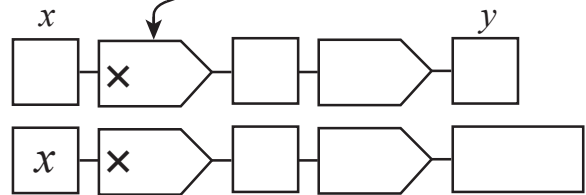


1c Find the equation of Line A.



Equation of Line A: $y =$ _____

2c Find the equation of Line A.

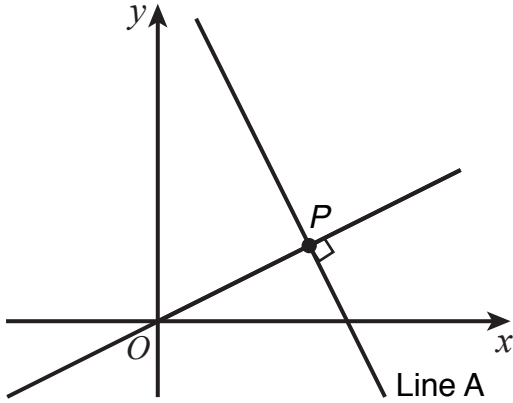


Equation of Line A: $y =$ _____

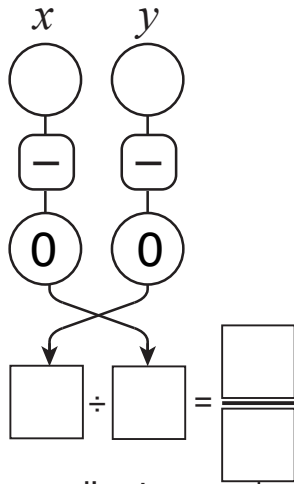
Perpendicular lines: equations 3

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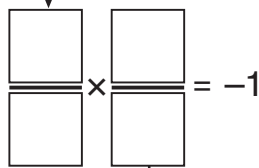
1 Here are two perpendicular lines. Point P has coordinates $(2, 1)$



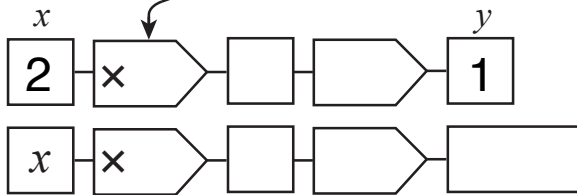
1a Calculate the gradient of OP .



1b Calculate the gradient of Line A.

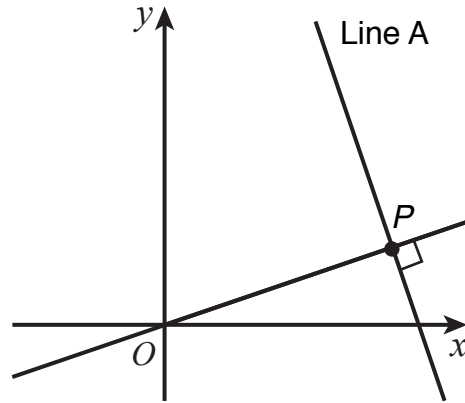


1c Find the equation of Line A.

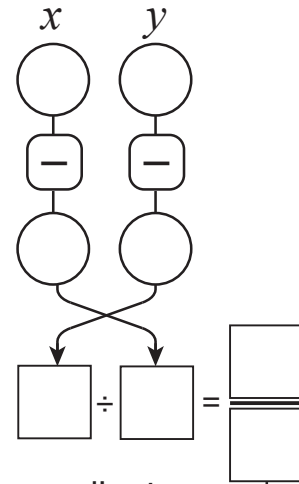


Equation of Line A: $y =$ _____

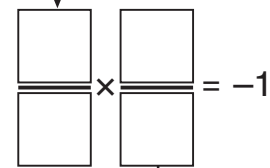
2 Here are two perpendicular lines. Point P has coordinates $(6, 2)$



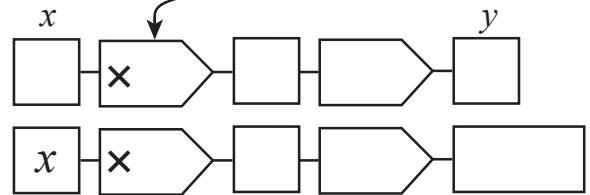
2a Calculate the gradient of OP .



2b Calculate the gradient of Line A.



2c Find the equation of Line A.

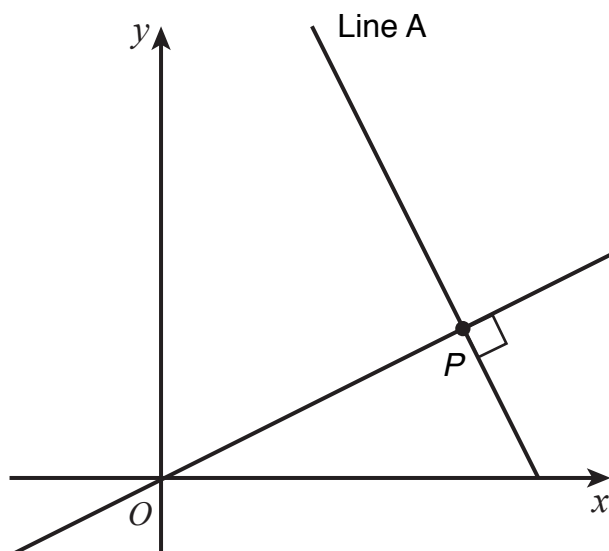


Equation of Line A: $y =$ _____

Perpendicular lines: equations Test

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- *
1 Here are two perpendicular lines.
Point P has coordinates $(4, 2)$



- 1a Calculate the gradient of OP .

Answer _____

- 1b Calculate the gradient Line A.

Answer _____

- 1c Find the equation of Line A.

Answer _____

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Perpendicular lines: equations 1

1 a $\frac{2}{1} \times -\frac{1}{2} = -1$

The gradient of line A is $-\frac{1}{2}$

1 b $1 \times -\frac{1}{2} \rightarrow -\frac{1}{2} \rightarrow +3\frac{1}{2} \rightarrow 4$

$$x \times -\frac{1}{2} \rightarrow -\frac{1}{2}x \rightarrow +3\frac{1}{2} \rightarrow -\frac{1}{2}x + 3\frac{1}{2}$$

$$y = -\frac{1}{2}x + 3\frac{1}{2}$$

2 a $\frac{1}{4} \times -\frac{4}{1} = -1$

The gradient of line A is -4

2 b $1 \rightarrow \times -4 \rightarrow -4 \rightarrow +8 \rightarrow 4$

$$x \rightarrow \times -4 \rightarrow -4x \rightarrow +8 \rightarrow -4x + 8$$

$$y = -4x + 8$$

Perpendicular lines: equations 2

1 a $x \ 1 - 0 = 1$

$y \ 4 - 0 = 4$

$$4 \div 1 = 4$$

1 b $\frac{4}{1} \times -\frac{1}{4} = -1$

1 c $1 \times -\frac{1}{4} \rightarrow -\frac{1}{4} \rightarrow +4\frac{1}{4} \rightarrow 4$

$$x \times -\frac{1}{4} \rightarrow -\frac{1}{4}x \rightarrow +4\frac{1}{4} \rightarrow -\frac{1}{4}x + 4\frac{1}{4}$$

$$y = -\frac{1}{4}x + 4\frac{1}{4}$$

2 a $x \ 1 - 0 = 1$

$y \ 2 - 0 = 2$

$$2 \div 1 = 2$$

2 b $\frac{2}{1} \times -\frac{1}{2} = -1$

2 c $1 \times -\frac{1}{2} \rightarrow -\frac{1}{2} \rightarrow +2\frac{1}{2} \rightarrow 2$

$$x \times -\frac{1}{2} \rightarrow -\frac{1}{2}x \rightarrow +2\frac{1}{2} \rightarrow -\frac{1}{2}x + 2\frac{1}{2}$$

$$y = -\frac{1}{2}x + 2\frac{1}{2}$$

Perpendicular lines: equations 3

1 a $x \ 2 - 0 = 2$

$y \ 1 - 0 = 1$

$$1 \div 2 = \frac{1}{2}$$

1 b $\frac{1}{2} \times -\frac{2}{1} = -1$

1 c $2 \rightarrow \times -2 \rightarrow -4 \rightarrow +5 \rightarrow 1$

$$x \rightarrow \times -2 \rightarrow -2x \rightarrow +5 \rightarrow -2x + 5$$

$$y = -2x + 5$$

2 a $x \ 6 - 0 = 6$

$y \ 2 - 0 = 2$

$$2 \div 6 = \frac{1}{3}$$

2 b $\frac{1}{3} \times -\frac{3}{1} = -1$

2 c $6 \rightarrow \times -3 \rightarrow -18 \rightarrow +20 \rightarrow 2$

$$x \rightarrow \times -3 \rightarrow -3x \rightarrow +20 \rightarrow -3x + 20$$

$$y = -3x + 20$$

Perpendicular lines: equations Answers



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Perpendicular lines: equations Test

1 a $x - 4 = 0$

$y - 2 = 0$

$$2 \div 4 = \frac{1}{2}$$

1 b $\frac{1}{2} \times -\frac{2}{1} = -1$

1 c $4 \rightarrow x - 2 \rightarrow -8 \rightarrow +10 \rightarrow 2$

$x \rightarrow x - 2 \rightarrow -2x \rightarrow +10 \rightarrow -2x + 10$

$y = -2x + 10$