1) a) Tick the representation which matches the equation $2 x+3=9$.

b) Write down an equation to match each of the other representations.
$\qquad$
$\qquad$
2) Compare the value of $x$ and $y$ in these equations using <, > and =. Draw representations to show your working. Draw representations to show your working out.
$3 x+4=16$
$2 y+4=16$

$4 x-5=15$
$3 y-5=10$

$2(x+4)=28$
$3(y+4)=27$


3) Create three equations where $x=3$, using the numbers and expressions below. Draw representations of your equations.

4) Is the value of the letter $x$ the same in both equations? Prove your answer using diagrams and explain your reasoning.

$$
3(x+4)=30
$$

| $3(x+4)=30$ |  |
| :--- | :--- |
|  |  |
|  |  |

$$
3 x+4=22
$$

$\qquad$
$\qquad$

b) Write three different expressions that will balance this equation.
$\qquad$
$\qquad$
$\qquad$
3) a) Do the operations correctly show how to use inverse operations to find the value of $x$ ? Explain your reasoning.

b) Complete the inverse operations to find the value of $x$.


There are six different possible values for $x$ in this equation. Can you find them all and write the six different equations? Show your working out. One has been done for you:
$\square x+4=34$
$15 x+4=34$ where $x=2$

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1) What could the missing digits in this equation be? Find more than one possible answer. For example: If $x=17$, then $3 x+13=64$

$$
3 x+\square=\square \begin{aligned}
& \begin{array}{l}
\text { The value of } x \text { in my equation is a two-digit prime } \\
\text { number less than } 30 . \text { The answer to the equation } \\
\text { is a square number. }
\end{array}
\end{aligned}
$$


2) The total length of all four pencils is 139 cm . Pencils $A$ and $B$ are the same length. Find the length of pencil $C$.

A


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