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### 2.1 Puzzle Time

## What Happened To The Wooden Plane With The Wooden Wheels and Wooden Engine?

Write the letter of each answer in the box containing the exercise number.

Describe the transformation of $f(x)=x^{2}$ represented by $g$.

1. $g(x)=-2 x^{2}$
2. $g(x)=(x-1)^{2}$
3. $g(x)=x^{2}-1$
4. $g(x)=(x+1)^{2}$
5. $g(x)=\frac{1}{2} x^{2}-2$
6. $g(x)=(x-2)^{2}-1$

Write a rule for $g$ described by the transformations of the graph of $\boldsymbol{f}$.
7. $f(x)=x^{2}$; vertical stretch by a factor of 2 and a reflection in the $x$-axis, followed by a translation 3 units down
8. $f(x)=x^{2}$; vertical shrink by a factor of $\frac{1}{2}$, followed by a translation 3 units left
9. $f(x)=4 x^{2}+10$; horizontal stretch by a factor of 2 , followed by a translation 3 units up
10. $f(x)=(x-2)^{2}-8$; horizontal shrink by a factor of $\frac{1}{2}$ and a translation 5 units down, followed by a reflection in the $x$-axis

## Answers

G. $g(x)=x^{2}+13$
T. translation 1 unit right
O. $g(x)=-(2 x-2)^{2}+13$
W. translation 1 unit down
D. translation 2 units right, followed by a translation 1 unit down
O. vertical shrink by a factor of $\frac{1}{2}$, followed by a translation 2 units down
I. reflection in the $x$-axis and a vertical stretch by a factor of 2
E. $g(x)=-2 x^{2}-3$
N. $g(x)=\frac{1}{2}(x+3)^{2}$
O. translation 1 unit left


