



Name _____ Class _____ Date _____

AFTER THIS WORKSHEET YOU CAN

- ✓ Apply a matrix to a vector. ✓ Recognise scaling, reflection, rotation and shear. ✓ Use the identity transformation.
- ✓ Understand composition order.

Section A • Concept Check • BEGINNER $4 \times 1 = 4$ _____

- $A = \begin{bmatrix} 4 & 0 \\ 0 & 4 \end{bmatrix}$, $v = (1, 3)$. $T(v) = ?$
☐ A. (4,12) ☐ B. (1,3) ☐ C. (4,3) ☐ D. (5,7)
- $A = \begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$, $v = (5, 2)$ (reflect over y-axis). $T(v) = ?$
☐ A. (-5,2) ☐ B. (5,-2) ☐ C. (-5,-2) ☐ D. (5,2)
- $A = \begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$, $v = (3, 4)$ (90° rotation). $T(v) = ?$
☐ A. (-4,3) ☐ B. (4,-3) ☐ C. (3,4) ☐ D. (-3,-4)
- $A = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$, $v = (1, 1)$ (shear). $T(v) = ?$
☐ A. (3,1) ☐ B. (1,1) ☐ C. (1,3) ☐ D. (2,1)

Section B • Problem Solving • INTERMEDIATE $2 + 3 \times 3 = 11$ _____

- A linear transformation is applied by multiplying the matrix by the _____.
- $A = \begin{bmatrix} 4 & 0 \\ 0 & 4 \end{bmatrix}$ scales every vector by _____.
- $A = \begin{bmatrix} 4 & 0 \\ 0 & 4 \end{bmatrix}$. Find $T(v)$ for $v = (1, 3)$.

- $A = \begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$. Find $T(v)$ for $v = (5, 2)$. (reflect over y-axis)

- $A = \begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$. Find $T(v)$ for $v = (3, 4)$. (90° rotation)

Section C • Challenge • CHALLENGE 5 _____

- $A = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$. Find $T(v)$ for $v = (1, 1)$. (shear)

Reflection — the most useful thing I learned: _____

A ___/4 B ___/11 C ___/5 Total ___/20

Teacher's Signature _____

Parent's Signature _____

ANSWER KEY — FOLD OR CUT BEFORE HANDING OUT

1-A 2-A 3-A 4-A | 5 vector 6 4 7 = (4,12) 8 = (-5,2) 9 = (-4,3) | 10 = (3,1)