Dot Product WS

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Find the dot product of the given vectors.

1) $\mathbf{u} = \langle -8, 1 \rangle$
$\mathbf{v} = \langle 7, 5 \rangle$

$-56 + 5$

$\boxed{-51}$

2) $\mathbf{u} = \langle 5, 1 \rangle$
$\mathbf{v} = \langle 0, -2 \rangle$

$0 + (-2)$

$\boxed{-2}$

3) $\mathbf{u} = \langle 7, 9 \rangle$
$\mathbf{v} = \langle 9, -9 \rangle$

$63 + (-81)$

$\boxed{-18}$

4) $\mathbf{u} = \langle -8, 6 \rangle$
$\mathbf{v} = \langle -7, 1 \rangle$

$56 + 6$

$\boxed{62}$

5) $\mathbf{u} = \langle -5, -2 \rangle$
$\mathbf{v} = \langle -9, -2 \rangle$

$45 + 4$

$\boxed{49}$

6) $\mathbf{u} = \langle -3, -3 \rangle$
$\mathbf{v} = \langle -6, -7 \rangle$

$18 + 21$

$\boxed{39}$

7) $\mathbf{u} = \langle -8, -7 \rangle$
$\mathbf{v} = \langle -2, -2 \rangle$

$16 + 14$

$\boxed{30}$

8) $\mathbf{u} = \langle -3, 2 \rangle$
$\mathbf{v} = \langle -4, -8 \rangle$

$12 + (-16)$

$\boxed{-4}$

9) $\mathbf{u} = \langle 1, 0 \rangle$
$\mathbf{v} = \langle 5, 2 \rangle$

$5 + 0$

$\boxed{5}$

10) $\mathbf{u} = \langle 4, 9 \rangle$
$\mathbf{v} = \langle -4, -3 \rangle$

$-16 + (-27)$

$\boxed{-43}$

State if the two vectors are parallel, orthogonal, or neither.

11) $\mathbf{u} = \langle 7, 6 \rangle$
$\mathbf{v} = \langle 14, 14 \rangle$

$98 + 84 \neq 0$

$\boxed{\text{neither}}$

12) $\mathbf{u} = \langle -10, -8 \rangle$
$\mathbf{v} = \langle 4, -5 \rangle$

$-40 + (40) = 0$

$\boxed{\text{orthogonal}}$

13) $\mathbf{u} = \langle 6, -14 \rangle$
$\mathbf{v} = \langle -2, 4 \rangle$

$-12 + (-28) \neq 0$

$\boxed{\text{neither}}$

14) $\mathbf{u} = \langle -12, 27 \rangle$
$\mathbf{v} = \langle -4, 9 \rangle$

$3\langle -4, 9 \rangle = \langle -12, 27 \rangle$

$\boxed{\text{parallel}}$

15) $\mathbf{u} = \langle 2, 6 \rangle$
$\mathbf{v} = \langle -12, 4 \rangle$

$-24 + 24 = 0$

$\boxed{\text{orthogonal}}$

16) $\mathbf{u} = \langle -16, 24 \rangle$
$\mathbf{v} = \langle -4, 6 \rangle$

$4\langle -4, 6 \rangle = \langle -16, 24 \rangle$

$\boxed{\text{parallel}}$