

keep scrolling to get
a sneak peek!

Help your PreCalculus students practice finding the **dot product & angle between two vectors** with this task card activity! Your students are going to love this self-checking activity!

Print and use this set of 24 task cards in minutes. They are simple to prep and fit well into any Precalculus unit on vectors. Add them to your rotation for easy skill practice all year.

DOT PRODUCT & ANGLES BETWEEN VECTORS

24 PRE-CALCULUS TASK CARDS

Directions: Find the angle between the two vectors. Show your work in the space provided.

Name: _____ Date: _____

M $u = \langle 1, 0 \rangle$ $v = \langle 0, 1 \rangle$
 $(1)(0) + (0)(1) = 0$
 $\|u\| = \sqrt{1^2 + 0^2} = \sqrt{1} = 1$
 $\|v\| = \sqrt{0^2 + 1^2} = \sqrt{1} = 1$
 $\cos \theta = \frac{0}{1 \cdot 1} = 0$
 $\theta = 90^\circ$

N $u = \langle 1, 0 \rangle$ $v = \langle 1, 1 \rangle$
 $u \cdot v = (1)(1) + (0)(1) = 1$
 $\|u\| = \sqrt{1^2 + 0^2} = \sqrt{1} = 1$
 $\|v\| = \sqrt{1^2 + 1^2} = \sqrt{2}$
 $\cos \theta = \frac{1}{1 \cdot \sqrt{2}} = \frac{\sqrt{2}}{2}$
 $\theta = 45^\circ$

Q $u = \langle 1, 1 \rangle$ $v = \langle 1, -1 \rangle$
 $u \cdot v = (1)(1) + (1)(-1) = 0$
 $\|u\| = \sqrt{1^2 + 1^2} = \sqrt{2}$
 $\|v\| = \sqrt{1^2 + (-1)^2} = \sqrt{2}$
 $\cos \theta = \frac{0}{\sqrt{2} \cdot \sqrt{2}} = \frac{0}{2} = 0$
 $\theta = 90^\circ$

R $u = \langle 3, 0 \rangle$ $v = \langle -3, 3 \rangle$
 $u \cdot v = (3)(-3) + (0)(3) = -9$
 $\|u\| = \sqrt{3^2 + 0^2} = 3$
 $\|v\| = \sqrt{(-3)^2 + (3)^2} = \sqrt{18} = 3\sqrt{2}$
 $\cos \theta = \frac{-9}{3 \cdot 3\sqrt{2}} = -\frac{1}{\sqrt{2}} = -\frac{\sqrt{2}}{2}$
 $\theta = 135^\circ$

V $u = \langle 3, 0 \rangle$ $v = \langle 2, 2 \rangle$
 $u \cdot v = (3)(2) + (0)(2) = 6$
 $\|u\| = \sqrt{3^2 + 0^2} = 3$
 $\|v\| = \sqrt{2^2 + 2^2} = 2\sqrt{2}$
 $\cos \theta = \frac{6}{3 \cdot 2\sqrt{2}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$
 $\theta = 45^\circ$

W $u = \langle 2, -1 \rangle$ $v = \langle -1, -2 \rangle$
 $u \cdot v = (2)(-1) + (-1)(-2) = 0$
 $\|u\| = \sqrt{2^2 + (-1)^2} = \sqrt{5}$
 $\|v\| = \sqrt{(-1)^2 + (-2)^2} = \sqrt{5}$
 $\cos \theta = \frac{0}{5} = 0$
 $\theta = 90^\circ$

X $u = \langle 4, 1 \rangle$ $v = \langle 4, -2 \rangle$
 $u \cdot v = (4)(4) + (1)(-2) = 14$
 $\|u\| = \sqrt{4^2 + 1^2} = \sqrt{17}$
 $\|v\| = \sqrt{4^2 + (-2)^2} = \sqrt{20} = 2\sqrt{5}$
 $\cos \theta = \frac{14}{\sqrt{17} \cdot 2\sqrt{5}} = \frac{7}{\sqrt{85}}$
 $\theta = \cos^{-1}\left(\frac{7}{\sqrt{85}}\right)$

S Find the angle between $\langle 1, 2 \rangle$ and $\langle 2, 0 \rangle$

Find the dot product of $\langle 5, -2 \rangle$ and $\langle 3, 7 \rangle$

Find the dot product of $\langle 4, -5 \rangle$ and $\langle -3, 6 \rangle$

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Answers printed on the back!

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Why do you need this?

Dot Product & Angle Between Vectors Task Cards



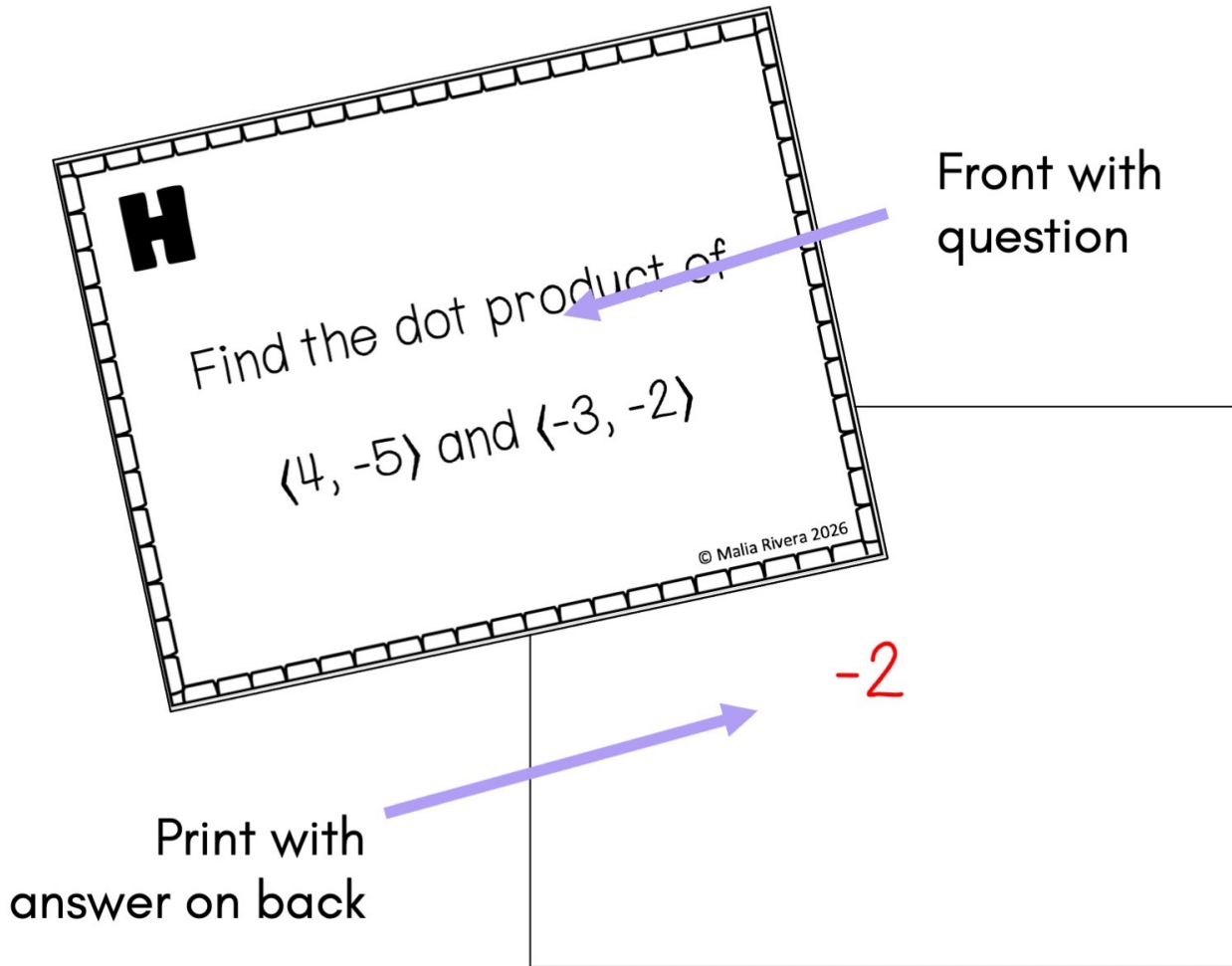
Task cards are an effective, low-prep way to create engaging and interactive learning experience



Task cards are very versatile because they cater to a wide range of student needs

The image displays several task cards. In the background, there are two larger sheets of paper. The first is titled "DOT PRODUCT TASK CARDS" and has a grid of 12 boxes labeled A through L. The second is titled "ANGLES BETWEEN VECTORS TASK CARDS" and has a grid of 12 boxes labeled M through T. In the foreground, three smaller task cards are shown. The first card, labeled 'T', asks to find the angle between $\langle 2, 1 \rangle$ and $\langle 1, 1 \rangle$. The second card, labeled 'C', asks to find the dot product of $\langle 5, -2 \rangle$ and $\langle 3, 7 \rangle$. The third card, labeled 'N', asks to find the angle between $\langle 1, 0 \rangle$ and $\langle 1, 1 \rangle$. A copyright notice "© Malia Rivera 2026" is visible in the bottom right corner of the cards.

Dot Product & Angle Between Vectors Task Cards *includes:*



- ✓ set of 24 task cards - 12 dot product & 12 angle
- ✓ 2 recording sheets for students to show their work
- ✓ a detailed answer key
- ✓ Printing tips to print the answers on the back of the corresponding question cards

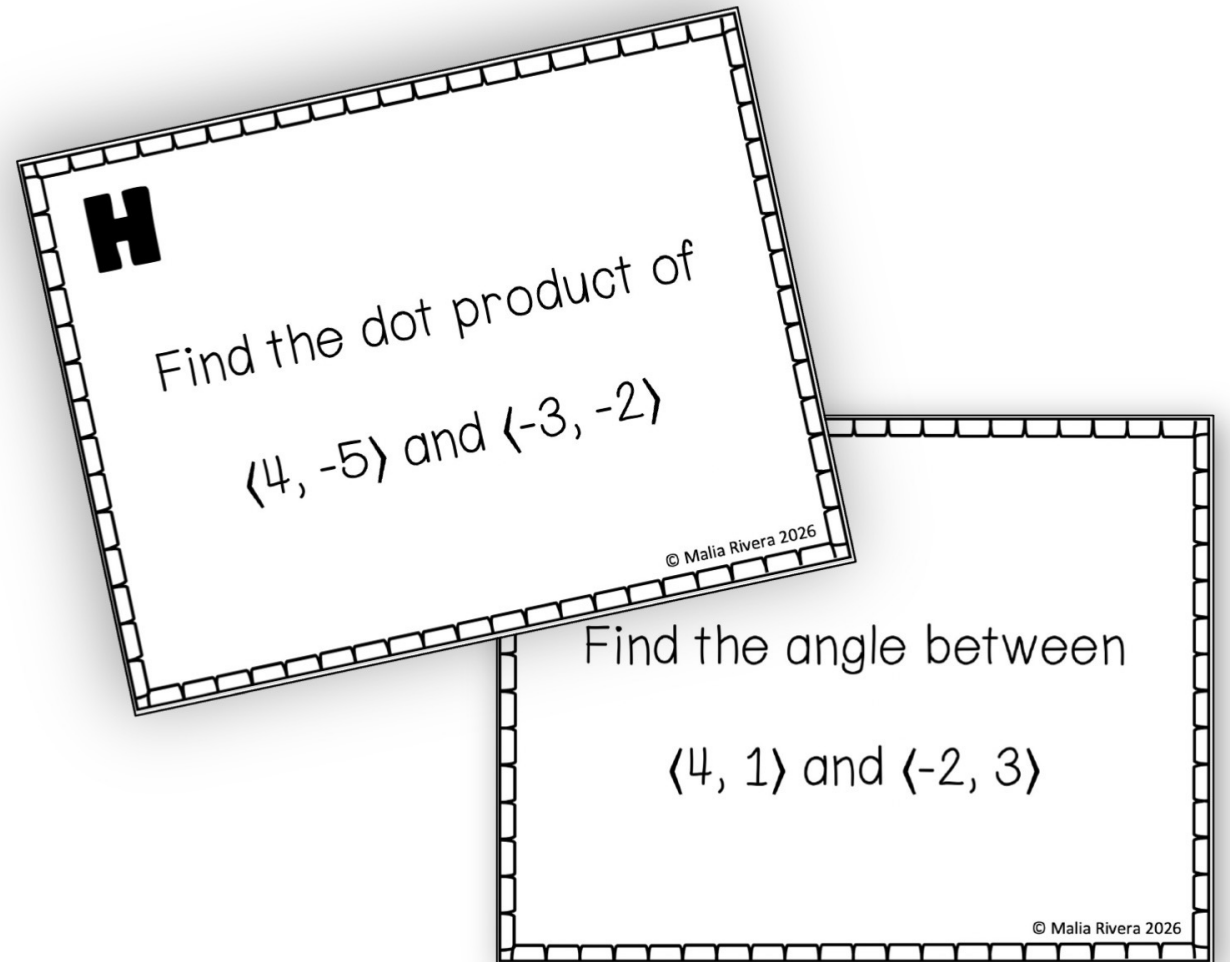
Dot Product & Angle Between Vectors Task Cards

standards covered:

CCSS: HSN-VM.A.1,
HSN-VM.B.5, HSN-VM.B.5b

TEKs: P.4.I, P.4.J

VA SOLs: AG.MA.7



how to use this resource

This is a great individual practice activity to use when reviewing how to find the dot product, magnitude, and angle between vectors.

You can also use this in small groups, math centers, or as a scavenger hunt.

This is also a **substitute-friendly** assignment!

Name: **ANSWER KEY** Date: _____ Pd: _____

DOT PRODUCT TASK CARDS

Directions: Find the dot product of the two vectors. Show your work in the corresponding boxes below.

A $\langle 3, 4 \rangle + \langle 2, 5 \rangle$ $(3)(2) + (4)(5)$ $6 + 20$ $\boxed{26}$	B $\langle -1, 6 \rangle + \langle 4, 2 \rangle$ $(-1)(4) + (6)(2)$ $-4 + 12$ $\boxed{8}$	C $\langle 5, -2 \rangle + \langle 3, 7 \rangle$ $(5)(3) + (-2)(7)$ $15 - 14$ $\boxed{1}$	D $\langle 0, 8 \rangle + \langle 6, -3 \rangle$ $(0)(6) + (8)(-3)$ $0 - 24$ $\boxed{-24}$
E $\langle 7, 1 \rangle + \langle -1, -1 \rangle$ $(7)(-1) + (1)(-1)$ $-7 - 1$ $\boxed{-8}$	F $\langle 2, -1 \rangle + \langle -1, -1 \rangle$ $(2)(-1) + (-1)(-1)$ $-2 + 1$ $\boxed{-1}$	G $\langle 9, 2 \rangle + \langle 1, -6 \rangle$ $(9)(1) + (2)(-6)$ $9 - 12$ $\boxed{-3}$	H $\langle 4, -5 \rangle + \langle -3, -2 \rangle$ $(4)(-3) + (-5)(-2)$ $-12 + 10$ $\boxed{-2}$

I
 $\langle 4, 4 \rangle + \langle -4, -4 \rangle$
 $(4)(-4) + (4)(-4)$
 $-16 - 16$
 $\boxed{-32}$

J
 $\langle 1, 1 \rangle + \langle 1, 1 \rangle$
 $(1)(1) + (1)(1)$
 $1 + 1$
 $\boxed{2}$

K
 $\langle 1, 1 \rangle + \langle 1, 1 \rangle$
 $(1)(1) + (1)(1)$
 $1 + 1$
 $\boxed{2}$

L
 $\langle 1, 1 \rangle + \langle 1, 1 \rangle$
 $(1)(1) + (1)(1)$
 $1 + 1$
 $\boxed{2}$

M
 $\langle 1, 1 \rangle + \langle 1, 1 \rangle$
 $(1)(1) + (1)(1)$
 $1 + 1$
 $\boxed{2}$

N
Find the angle between
 $\langle 1, 0 \rangle$ and $\langle 1, 1 \rangle$

Rivera 2026

TIPS FOR USE

When printing this set of task cards, be sure to select "short-edged binding" when printing on both sides. This will allow the answers to be printing on the back of the corresponding card.

After printing, I highly recommend laminating the task cards to the can be used in the future.

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to can



hey there!

My name is Malia and I'm passionate about making learning and practicing math fun. I love creating engaging math resources for my students and I hope your students enjoy this activity too!

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