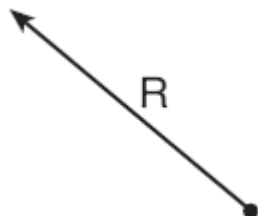


NAME: _____

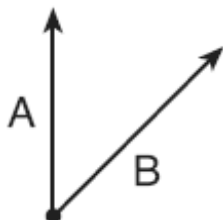
1. 010808b

The accompanying diagram shows a resultant force vector, R .

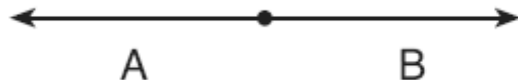


Which diagram best represents the pair of component force vectors, A and B , that combined to produce the resultant force vector R ?

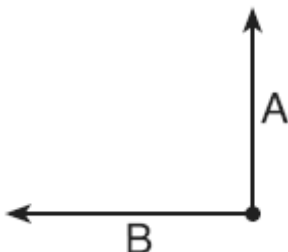
[A]



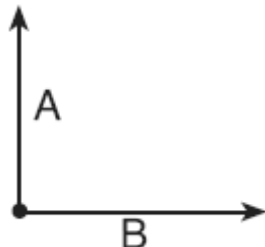
[B]



[C]



[D]



2. 080228b, P.I. A2.A.73

Two tow trucks try to pull a car out of a ditch. One tow truck applies a force of 1,500 pounds while the other truck applies a force of 2,000 pounds. The resultant force is 3,000 pounds. Find the angle between the two applied forces, rounded to the *nearest degree*.

3. 010430b, P.I. A2.A.73

One force of 20 pounds and one force of 15 pounds act on a body at the same point so that the resultant force is 19 pounds. Find, to the *nearest degree*, the angle between the two original forces.

4. 060428b, P.I. A2.A.73

Two equal forces act on a body at an angle of 80° . If the resultant force is 100 newtons, find the value of one of the two equal forces, to the *nearest hundredth of a newton*.

TRIANGLES: Vectors

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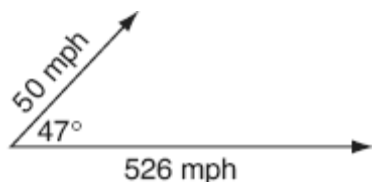
NAME: _____

5. 010827b, P.I. A2.A.73

The measures of the angles between the resultant and two applied forces are 65° and 42° , and the magnitude of the resultant is 24 pounds. Find, to the *nearest pound*, the magnitude of the larger force.

6. 060734b, P.I. A2.A.73

A jet is flying at a speed of 526 miles per hour. The pilot encounters turbulence due to a 50-mile-per-hour wind blowing at an angle of 47° , as shown in the accompanying diagram.



Find the resultant speed of the jet, to the *nearest tenth of a mile per hour*. Use this answer to find the measure of the angle between the resultant force and the wind vector, to the *nearest tenth of a degree*.

7. 060834b, P.I. A2.A.73

Gerardo and Bennie are pushing a box. Gerardo pushes with a force of 50 pounds in an easterly direction, and Bennie pushes with a force of 39 pounds in a northeasterly direction. The resultant force forms an angle of 32° with the 39-pound force. Find the angle between the 50-pound force and the 39-pound force, to the *nearest tenth of a degree*. Find the magnitude of the resultant force, to the *nearest pound*.

8. 010734b, P.I. A2.A.73

Two forces of 40 pounds and 20 pounds, respectively, act simultaneously on an object. The angle between the two forces is 40° . Find the magnitude of the resultant, to the *nearest tenth of a pound*. Find the measure of the angle, to the *nearest degree*, between the resultant and the larger force.

[1] C _____

[4] 63, and appropriate work is shown.

[3] Appropriate work is shown, but one computational or rounding error is made.

or [3] Appropriate work is shown, but the supplement of the angle is found, resulting in an answer of 117.

[2] Appropriate work is shown, but more than one computational or rounding error is made.

or [2] A conceptual error is made when applying the Law of Cosines.

[1] A correctly labeled diagram is drawn, but no further correct work is shown.

or [1] 63, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[2] incorrect procedure.

[4] 116, and appropriate work is shown.

[3] Appropriate work is shown, but one computational or rounding error is made.

or [3] Appropriate work is shown, but the supplement of the correct answer, 64, is found.

[2] Appropriate work is shown, but two or more computational or rounding errors are made.

or [2] Appropriate work is shown, but one conceptual error is made.

[1] The correct substitutions are made into the Law of Cosines, but no further correct work is shown.

or [1] 116, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[3] incorrect procedure.

[4] 65.27, and appropriate work is shown,

such as $\frac{100}{\sin 100} = \frac{x}{\sin 40}$.

[3] Appropriate work is shown, but one computational or rounding error is made.

or [3] Appropriate work is shown, but calculations are performed in radians, resulting in an answer of -147.15.

[2] Appropriate work is shown, but two or more computational or rounding errors are made.

or [2] Appropriate work is shown, but one conceptual error is made, such as the use of an incorrect trigonometric function.

or [2] An incorrect diagram is drawn, but appropriate work is shown, and an appropriate answer is found.

[1] A correctly labeled diagram is drawn, but no further correct work is shown.

or [1] 65.27, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[4] incorrect procedure.

[4] 23, and appropriate work is shown, such as using the Law of Sines.

[3] Appropriate work is shown, but one computational or rounding error is made.

[2] Appropriate work is shown, but two or more computational or rounding errors are made.

or [2] Appropriate work is shown, but one conceptual error is made, such as finding 17, the smaller force.

[1] Appropriate work is shown, but one conceptual error and one computational or rounding error are made,

or [1] 23, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[5] incorrect procedure.

TRIANGLES: Vectors

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- [6] 561.3 and 43.3, and appropriate work is shown, such as using the Law of Cosines and the Law of Sines.
- [5] Appropriate work is shown, but one computational or rounding error is made.
- [4] Appropriate work is shown, but two or more computational or rounding errors are made.
- or [4] The resultant speed is found correctly, but no further correct work is shown.
- [3] Appropriate work is shown, but one conceptual error is made.
- [2] Appropriate work is shown, but one conceptual error and one computational or rounding error are made.
- [1] Correct substitutions are made into the Law of Cosines, but no further correct work is shown.
- or [1] 561.3 and 43.3, but no work is shown.
- [0] 561.3 or 43.3, but no work is shown.
- or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
-

- [6] 56.4 and 79, and appropriate work is shown, such as using the Law of Sines and then the Law of Cosines or the Law of Sines.
- [5] Appropriate work is shown, but one computational or rounding error is made.
- or [5] Appropriate work is shown, and the angle between the resultant and the 50-pound force is found to be 24.4 and the force is found to be 79, but the angle between the original forces is not stated.
- [4] Appropriate work is shown, but two or more computational or rounding errors are made.
- [3] Appropriate work is shown, but one conceptual error is made.
- or [3] Appropriate work is shown to find 56.4, but no further correct work is shown.
- [2] Appropriate work is shown, but one conceptual error and one computational or rounding error are made.
- or [2] Appropriate work is shown to find 24.4, but no further correct work is shown.
- or [2] 56.4 and 79, but no work is shown.
- [1] A complete and correctly labeled diagram is drawn to illustrate the problem, but no further correct work is shown.
- or [1] 56.4 or 79, but no work is shown.
- [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
-

[6] 56.8 and 13, and appropriate work is shown, such as using the Law of Cosines and the Law of Sines.

[5] Appropriate work is shown, but one computational or rounding error is made.

[4] Appropriate work is shown, but two or more computational or rounding errors are made.

or [4] The Law of Cosines is used correctly to determine the magnitude of the resultant, but no further correct work is shown.

[3] Appropriate work is shown, but one conceptual error is made.

[2] Appropriate work is shown, but one conceptual error and one computational or rounding error are made.

or [2] 56.8 and 13, but no work is shown.

[1] Appropriate work is shown to find the measure of the angle, but one computational or rounding error is made, and no further correct work is shown.

or [1] Correct substitutions are made into the Law of Cosines, but no further correct work is shown.

or [1] 56.8, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[8] incorrect procedure.
