
Measuring Angles and Applications of Vectors

- 1) Draw a set of axes. Label N, S, E, and W. Then write the degree measures. Next, label NE, SE, SW and NW and find their degree measures so that NE is exactly halfway between N and E.

- 2) What would it look like if you drew an angle that was 30° west of north?

Notation: _____

For each of the following, draw a picture and use the picture to write the angle in standard form.

3) $N45^\circ W$

4) $S22.7^\circ E$

5) Bearing 327°

6) $N3.8^\circ E$

7) $S38.6^\circ W$

8) $S15.8^\circ W$

9) Bearing 13.9°

10) $N42.61^\circ E$

Given the standard form, draw a picture and then fill in the blank.

11) $22.7^\circ \rightarrow$ Bearing _____

12) $213.45^\circ \rightarrow$ S _____

13) $97.4^\circ \rightarrow$ N _____

14) $335.6^\circ \rightarrow$ S _____

15) $18.2^\circ \rightarrow$ N _____

16) $316.58^\circ \rightarrow$ Bearing _____

17) $174.6^\circ \rightarrow$ N _____

18) $264.8^\circ \rightarrow$ S _____

Use the equation that writes a vector in terms of magnitude (speed) and direction (based on the angle of the vector) to write a vector for each of the following. Write both the approximate answer and the exact answer, if possible. Round all decimals to the nearest hundredth.

$$\mathbf{v} = \|\mathbf{v}\|(\cos \theta \mathbf{i} + \sin \theta \mathbf{j})$$

19) A plane is heading 32° west of north at a speed of 536 mph.

20) A boat is heading $S53^\circ E$ at a speed of 20 mph.

21) A car is heading directly east at a speed of 68 mph.

22) A really small child is bearing 128° at a speed of 3 feet per minute.

23) A really large cat is running $S13.5^\circ W$ at a speed of 48 feet per minute.

24) A tiny hamster is scurrying $N16.27^\circ E$ at a speed of $\frac{1}{28}$ feet per second.

25) A cuddly panda is BEARing 343.7° at $\frac{1}{2}$ feet per second.

26) An adorable grandma is walking $S72^\circ W$ at a speed of 5 feet per minute.