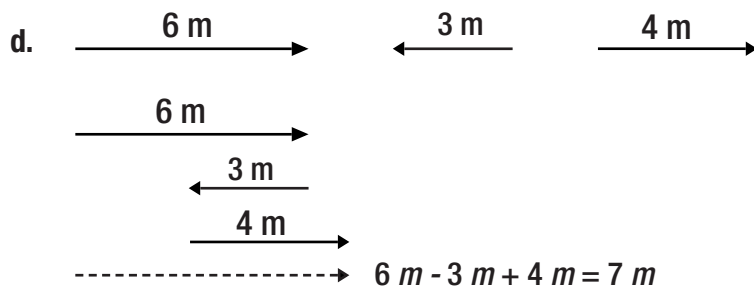# Unit 1D
Vectors & Scalars
Practice Problems TEACHER

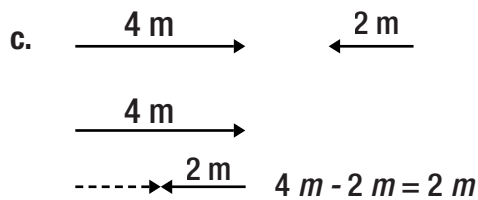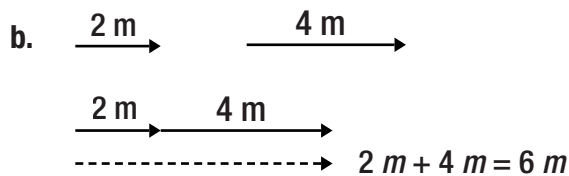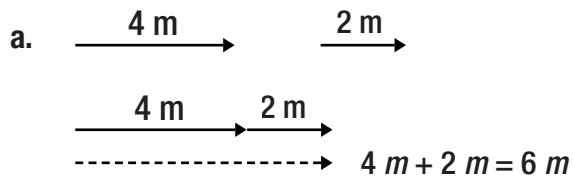## Work each of the following problems. SHOW ALL WORK.

1. **Classify the following measurements as vector or scalar quantities:**

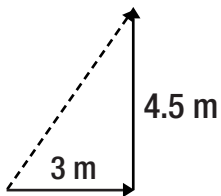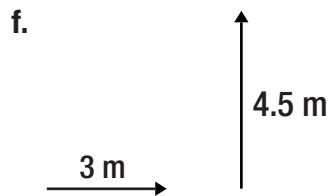|				
1.0 m =	*scalar*		2.35 m north =	*vector*
-3.2 N =	*vector*		4.2 s =	*scalar*
5.3 m/s^2 left =	*vector*		6.8 cm^2 =	*scalar*
9.2 kg =	*scalar*		7.3 km, 30° NE =	*vector*

2. **Add the following vectors together using the tip-to-tail method, and determine the magnitude of the resultant.**

a. 4 m → 2 m →

4 m → 2 m →
- - - - - - - - - - - → *4 m + 2 m = 6 m*

b. 2 m → 4 m →

2 m → 4 m →
- - - - - - - - - - - → *2 m + 4 m = 6 m*

c. 4 m → 2 m ←

4 m →
- - - - → ← 2 m *4 m - 2 m = 2 m*

d. 6 m → 3 m ← 4 m →

6 m →
← 3 m
4 m →
- - - - - - - - - - - → *6 m - 3 m + 4 m = 7 m*

e. ← 3 m 4 m → 6 m →

← 3 m
4 m →
6 m →
- - - - - - - - - - - → *-3 m + 4 m + 6 m = 7 m*

f.

4.5 m

3 m

4.5 m

3 m

$c^2 = a^2 + b^2$
$c^2 = (4.5\,m)^2 + (3\,m)^2$
$c^2 = 20.25\,m^2 + 9\,m^2$
$c^2 = 29.25\,m^2$
$c = 5.41\,m$

g.

4 m

4 m

1 m

1 m

4 m

4 m
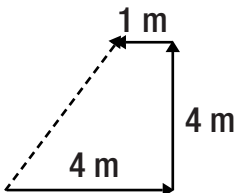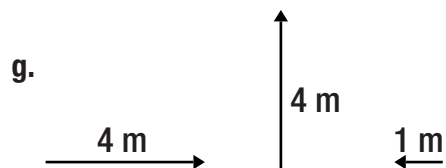
$c^2 = a^2 + b^2$
$c^2 = (4\,m)^2 + (3\,m)^2$
$c^2 = 16\,m^2 + 9\,m^2$
$c^2 = 25\,m^2$
$c = 5\,m$

4 m

2 m

h. 6 m   2 m

2 m

2 m

4 m

6 m
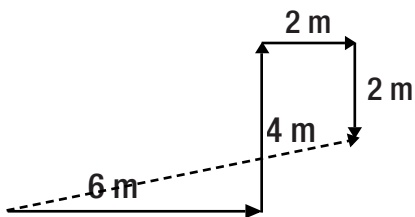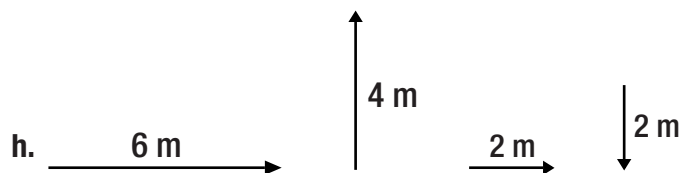
$c^2 = a^2 + b^2$
$c^2 = (8\,m)^2 + (2\,m)^2$
$c^2 = 64\,m^2 + 4\,m^2$
$c^2 = 68\,m^2$
$c = 8.25\,m$