Warm Up Questions

The height in centimetres is a function of the length, "l" in centimetres, of the humerus (the upper arm bone).

For a female: f(l) = 2.754(l) + 71.475
For a male: m(l) = 2.894(l) + 70.641

a) Determine each value. What does each number represent?

   i) $f(15)$ ii) $m(20)$

b) Determine each value of l. What does each number represent?

   i) $f(l) = 142$ ii) $m(l) = 194$

c) Measure the length of your humerus. Use an equation to estimate your height. How close was your answer to your actual height?

f(l) = 2.754(l) + 71.475
m(l) = 2.894(l) + 70.641

$f(x) = 15$

a) Determine each value. What does each number represent?

i) $f(15)$ **ii)** $m(20)$

$m(x) = 20$

f(l) = 2.754(l) + 71.475

f(15) = 2.754(15) + 71.475

f(15) = 41.31 + 71.475

f(15) = 112.785

B
E
D
M
P
S
∴

m(l) = 2.894(l) + 70.641

m(20) = 2.894(20) + 70.641

m(20) = 57.88 + 70.641

m(20) = 128.521

$f(l) = 2.754(l) + 71.475$
$m(l) = 2.894(l) + 70.641$

$f((42)$

$2.754 \, l + 71.475$

b) Determine each value of l. What does each number represent?

142

i) $f(l) = 142$ ii) $m(l) = 194$

-71.475

f(l) = 2.754(l) + 71.475

142 = 2.754(l) + 71.475

142 - 71.475 = 2.754(l)

$\dfrac{70.525}{2.754} = \dfrac{2.754(l)}{2.754}$

25.6 = l

$l = 23.6...$

m(l) = 2.894(l) + 70.641

194 = 2.894(l) + 70.641

70.641

194 - 70.641 = 2.894(l)

$\dfrac{123.359}{2.894} = \dfrac{2.894(l)}{2.894}$

42.6 = l

$l = 42.6$

$3x^2 + 1x + 2x$
$3x^2 + 3x$

$$f(x) = \frac{1}{2}x + 3$$

① $13^{-3} = \frac{1}{2}x + 3 - 3$

$$\frac{10}{\frac{1}{2}} = \frac{\frac{1}{2}x}{\frac{1}{2}}$$

$$\frac{10}{1} \times \frac{2}{1} = x$$

$$20 = x$$

① $f\!\!/\!\!0 = 13$

② $f(40)$ $\frac{4}{2} = \frac{2x}{2}$

$13^{-3} = 0.5x + 3 - 3$

$$\frac{10}{0.5} = \frac{0.5x}{0.5}$$

$$20 = X$$

$$f(40) = \frac{1}{2}(40) + 3$$

$$f(40) = \left(\frac{1 \cdot 40}{2 \cdot 1}\right) + 3$$

$$f(40) < \left(\frac{40}{2}\right) + 3$$

$$f(40) = 20 + 3$$

$$f(40) = 0.5(40) + 3$$

$$f(40) = 20 + 3$$

Interpreting & Sketching Graphs

Let's take a l👀k !!

Y-axis

Steep increase

Steep decrease

No change

Moderate increase

Steep decrease

Moderate decrease

Distance (m)

$\frac{11-5}{1} = 6$

5n

Scale for dependent variable

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14   X-axis

Time (min)

Scale for independent variable

A Scuba Diver's Dive

10   14   14-10

Depth (m)

20
16
12
8
4
0   2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
Time (min)
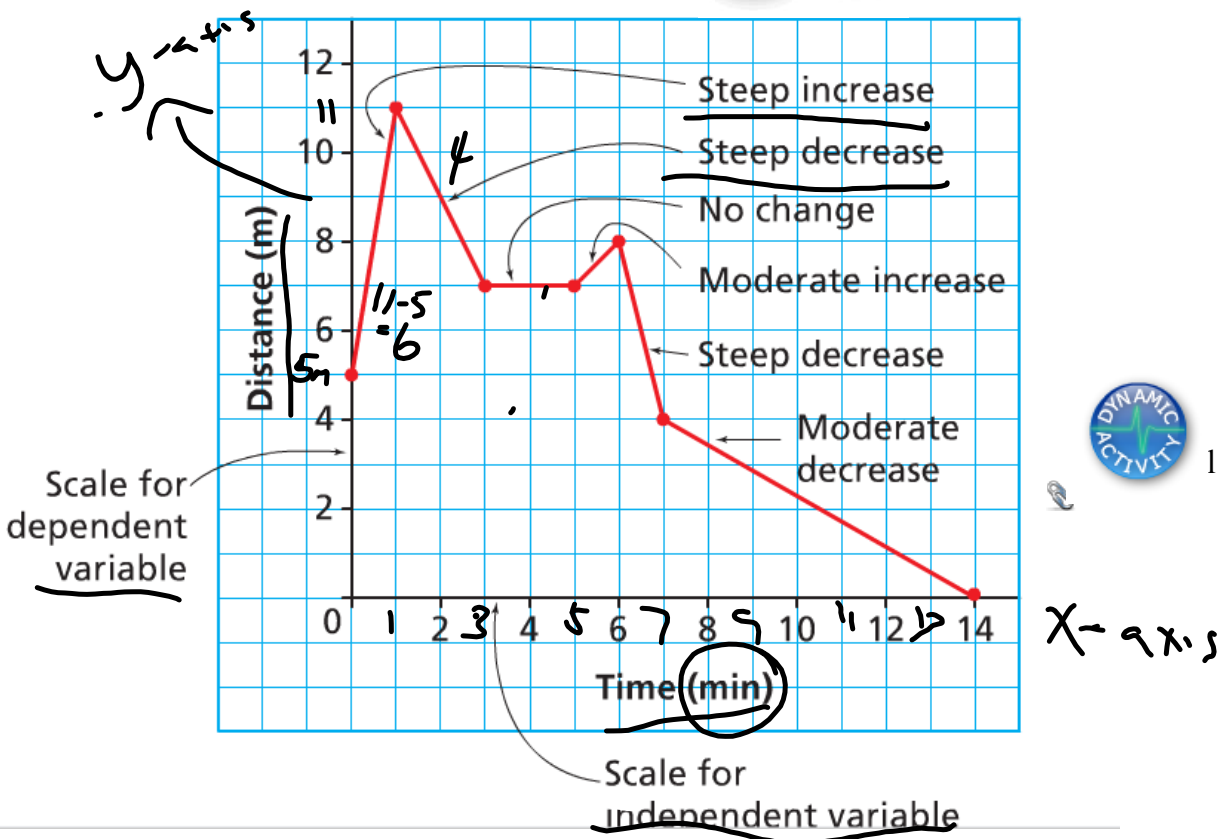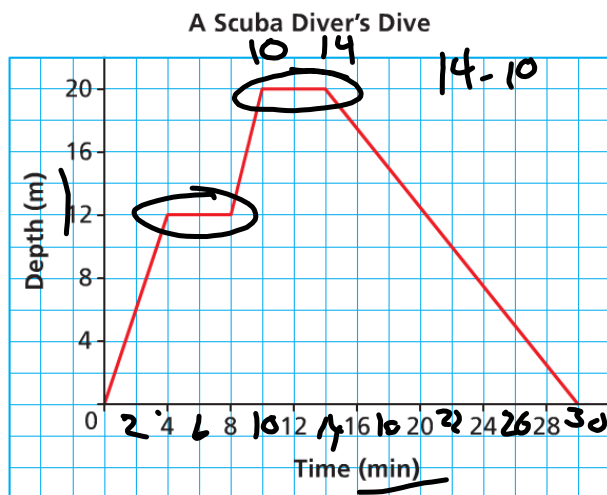
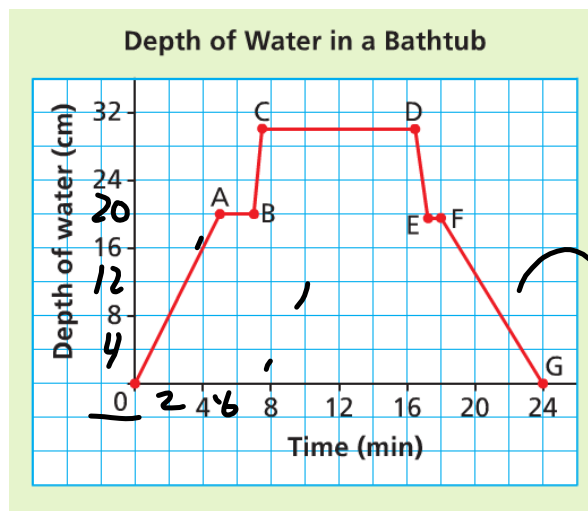# Graphs provide much information !!

How many minutes did the dive last? (30 mins)

At what times did the diver stop her descent? 4 mins + 10 mins

What was the greatest depth the diver reached? 20 m.

For how many minutes was the diver at that depth?

14 mins - 10 mns
= 4 mins.

Depth of Water in a Bathtub

Depth of water (cm)

4, 8, 12, 16, 20, 24, 28

Contours

Data.

32

4 (30)

What does segment OA represent? **filling up the tub for 5 min to a depth of 20cm**

What does segment AB represent? **the water was turned off.**

What does segment BC represent? **2 min later the person got into the tub**

What does segment CD represent? **the person stayed in the tub for approximately 9 min**

What does segment DE represent? **the person got out of the tub**

What does segment EF represent? **the person dried off**

What does segment FG represent? **the person pulled the plug, and it took 6 min for the tub to drain**

Try This!!

a) Which bag is the most expensive? What does it cost? C is 7

b) Which bag has the least mass? What is this mass? B 500g

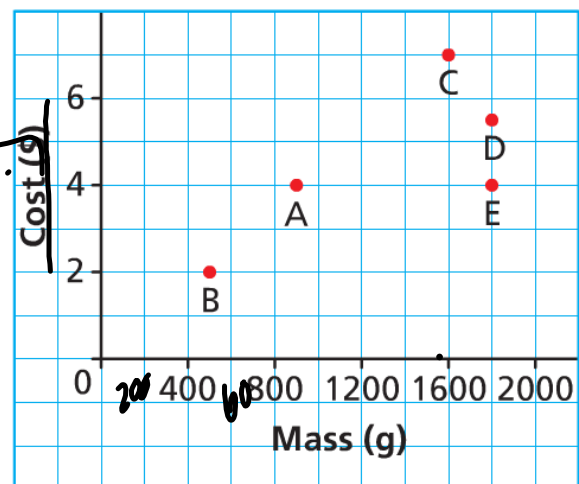**c)** Which bags have the same mass? What is this mass? D+E 1800g

d) Which bags cost the same? What is this cost? A+E $4

e) Which of bags C or D has the better value for money? D -> More for less

Costs and Masses of Various Bags of Popcorn

SOLUTION

Costs and Masses of Various Bags of Popcorn

a) Bag C is most expensive because it is represented by the highest point on the graph and the vertical axis represents cost. It costs $7.00.

b) Bag B has the least mass because it is represented by the point on the graph farthest to the left and the horizontal axis represents mass. The mass appears to be 500 g.

c) Bags D and E have the same mass because the points that represent them lie on the same vertical line and it passes through 1800 on the *Mass* axis. The mass is 1800 g.

d) Bags A and E cost the same because the points that represent them lie on the same horizontal line and it passes through 4 on the *Cost* axis. The cost is $4.00.

e) Bag D has the better value for money because it has a greater mass than bag C and costs less than bag C.
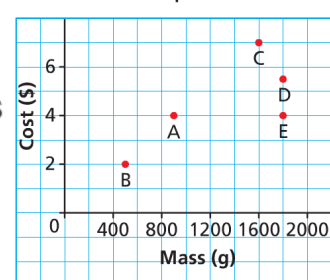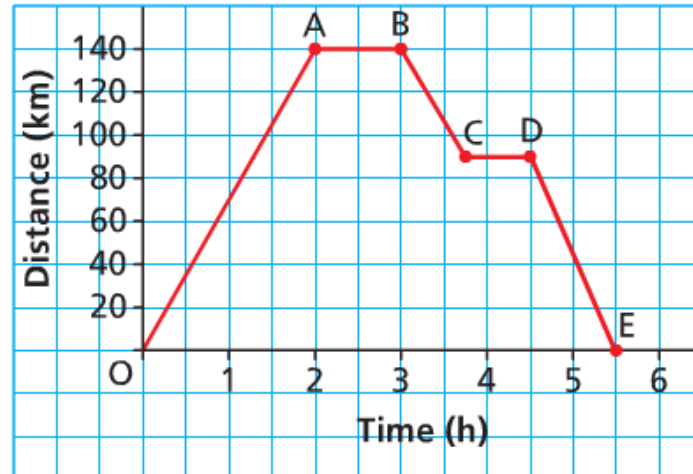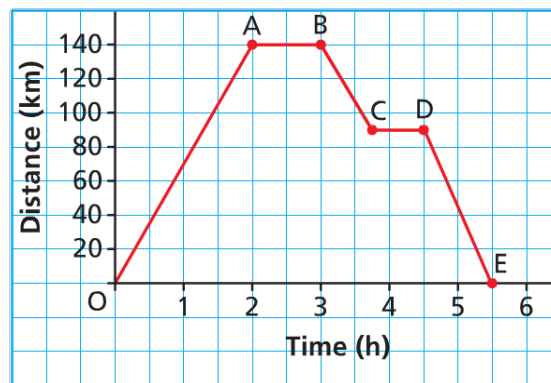
Try This!!

This graph represents a day trip from Athabasca to Kikino in Alberta, a distance of approximately 140 km.

Describe the journey for each segment of the graph.

Day Trip from Athabasca to Kikino

Day Trip from Athabasca to Kikino

[Answer: The car takes 2 h to travel 140 km to Kikino; the car stops for 1 h: the car takes approximately 45 min to travel 50 km toward Athabasca; the car stops for approximately 45 min; the car takes 1 h to travel approximately 90 km to Athabasca]

Check out pages 281 and 282

#3, 4, 5, 6, 7, 11