

Worksheet

Testing Physical Fitness

T: In this test, the person exercises by stepping onto and off on a bench (or stair) of height 18 inches for boys, 16 inches for girls.

The tester shouts, “Up – 2 – 3 – 4” continuously, the ‘Up’ command coming every 2 seconds for 4 minutes, the person continuing for as long as possible up to the complete four minutes.

The **pulse rate** is taken at the following times after the person stops exercising:

$$1 - 1\frac{1}{2} \text{ minutes; } 2 - 2\frac{1}{2} \text{ minutes; } 3 - 3\frac{1}{2} \text{ minutes.}$$

In each case the number of beats in the half minute is multiplied by 2 to give the pulse rate.

The **fitness index** is evaluated from

$$\text{Index} = \frac{50 \times T}{(p_1 + p_2 + p_3)}$$

where T is the duration of the exercise in seconds and p_1, p_2, p_3 are the measured pulse rates measured in beats per minute.

The grading is given in the table below.

Index	Grade
<50	Very poor
50 – 60	Poor
60 – 70	Fair
70 – 80	Good
89 – 90	Excellent
>90	Superb

- In each of these cases, calculate the fitness index and determine the grade for a 4-minute exercise.

- | | | | |
|----|-------------|------------|------------|
| a) | $p_3 = 80$ | $p_2 = 70$ | $p_1 = 60$ |
| b) | $p_1 = 90$ | $p_2 = 80$ | $p_3 = 75$ |
| c) | $p_1 = 100$ | $p_2 = 80$ | $p_3 = 60$ |
| d) | $p_1 = 100$ | $p_2 = 90$ | $p_3 = 80$ |

- Use this index to test your physical fitness.

Construct a graph of $P = p_1 + p_2 + p_3$ against T, the length of the exercise, to show the different areas for each grade (assume that $T > 120$ seconds and $P > 100$).