



**Measuring
Heart Rate**

Measuring Heart Rate Lesson Overview

Key Ideas in this Session:

Youth learn the relationship between activity level and heart rate. Youth discuss effort and persistence with athletic and academic goals, and ways to reframe talk about ourselves to emphasize what we can do and learn, and what we are working towards, instead of what we can't do or learn.

Driving Questions:

1. What does heart rate mean? Which activities result in high heart rates? Why?
2. Why is it important to have a healthy heart and to be physically fit?
3. How do effort and persistence support us as we work towards goals?

Math Standards:

3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs.

4.MD.1. Know relative sizes of measurement units within one system of units which could include km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec.

Activity	Time	Description
Activity 1	35 minutes	Youth measure their heart rate manually (by measuring their pulse) at various activity levels: at rest while sitting, after walking, after sit-ups, and after jumping jacks. Youth plot heart rate data on a graph.
Activity 2	20 minutes	Youth watch a video of an inspirational baseball player who demonstrates effort and persistence both as a player and a coach. Youth discuss key life lessons they can take away from the video. Next, youth work with a partner to identify one goal they want to accomplish, and several things they can do to work towards that goal.

Materials

- Worksheet 1 (one copy per youth)
- Worksheet 2 (one copy per youth)

Set-Up

For Activity 1, set out pencils and copies of **Worksheet 1**. Have youth do activities all together

For Activity 2, distribute **Worksheet 2**.

Growth Mindset Connection

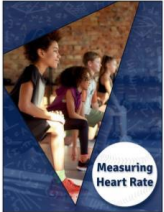
The power of effort and persistence.

Measuring Heart Rate Introduction

Start the session by providing youth with an overview of the key activities.

Measuring Heart Rate

Activity	Time	Description
Activity 1	35 minutes	You will measure your heart rate after different activities: sitting, walking, after sit-ups, and after jumping jacks. You will plot your data on a graph!
Activity 2	20 minutes	You will watch a video of an inspirational baseball player who demonstrates effort and persistence both as a player and a coach. You will work with a partner to identify one goal you want to accomplish, and several things you can do to work towards that goal.



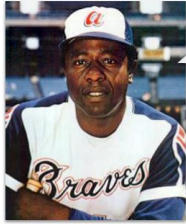
Measuring Heart Rate Youth Slides, Slide 1

Next, share and discuss this quote.

“You may not think you’re going to make it. You may want to quit. But if you keep your eye on the ball, you can accomplish anything.”

– Hank Aaron

Measuring Heart Rate



“You may not think you’re going to make it. You may want to quit. But if you keep your eye on the ball, you can accomplish anything.”
–Hank Aaron

What does this quote mean to you?
What message is Hank Aaron trying to send?

Activity 1

Measuring Heart Rate Youth Slides, Slide 2

Activity 1 - Measuring Heart Rate (1 of 4)

Description: In this activity, youth measure their heart rate **manually (by measuring their pulse)** at various activity stations. Youth do one activity at each station (sitting/resting, walking, sit-ups, and jogging/jumping). They measure and record their heart rate after the activity, and then rotate to the next station.

Math Ideas: Youth measure their pulse for 30 seconds, and then use this value to calculate their heart rate. Since a minute is equal to 60 seconds, they multiply the number of beats in 30 seconds by 2 to calculate the number of beats in 1 minute.

$$\text{Heart Rate} = \text{number of beats per unit of time (typically 1 minute)}$$

LAUNCH Connecting to Prior Knowledge:

To launch the activity, ask youth to share their prior knowledge about heart rate:

- What does heart rate mean?
- Who has measured their heart rate before?
- How did you measure it?
- What impacts your heart rate? When is it faster? slower?

Demonstrate How to Measure Heart Rate Manually:

Show youth a brief video that explains how to take your pulse (to measure your heart rate) manually.

<https://www.youtube.com/watch?v=8gbVAHcYpzi> (count the number of beats in 30 seconds, and double the number of beats)

OR

<https://www.youtube.com/watch?v=hyfUwUkwe74> (count the number of beats in 10 seconds, and multiply by 6; stop video at 2:00)

Activity 1: Measuring Heart Rate

- What does heart rate mean?
- Who has measured their heart rate before?
- How did you measure it?
- What makes your heart rate faster? Slower?

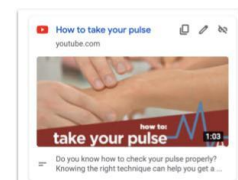


Activi

Measuring Heart Rate Youth Slides, Slide 3

How to measure your pulse/heart rate manually:

[How to take your pulse](#)



Activi

Measuring Heart Rate Youth Slides, Slide 4


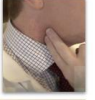
Activity 1 - Measuring Heart Rate (2 of 4)


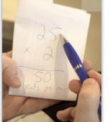
Practice How to Measure Heart Rate:

After viewing the video, give youth time to practice finding their pulse and counting their heart beats. Make sure that all youth know how to measure their pulse.

Steps to Take Your Pulse


- Place your first 2 fingers on the inside of your wrist or under your jaw.
- Feel for a strong pulse. The beat should be steady and regular.
- Count the number of beats in 30 seconds.

How can we find the number of beats in 1 minute?

- Multiply that number by 2 to get the number of beats in 1 minute.



Activity 1

Measuring Heart Rate Youth Slides, Slide 5

Activity All Together:

Explain one activity at a time, and guide youth to do the activity for 1 minute, to measure their pulse, and then record their pulse on Worksheet 1.

Measuring Heart Rate: All Together

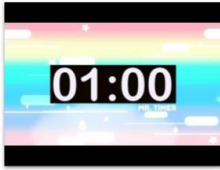
RESTING (1 minute): Pulse _____/minute (after resting/sitting)

WALKING (1 minute): Pulse _____/minute (after walking)

SIT-UPS (1 minute): Pulse _____/minute (after sit-ups)

JUMP/JOG (1 minute): Pulse _____/minute (after jumping or jogging)

Record Your Pulse after each Activity







Round 1: At rest, sit on a chair comfortably with feet on the ground for 1 minute. Measure your heart rate manually.

Round 2: Walk in place for 1 minute. Measure your heart rate manually.

Round 3: Do sit-ups for 1 minute. Measure your heart rate manually.

Round 4: Do jumping jacks for 1 minute. Measure your heart rate manually.

Activity

Measuring Heart Rate Youth Slides, Slide 6

Activity 1 - Measuring Heart Rate (3 of 4)

Activities:



1: Sitting/Resting

Sit on a chair and rest your arm on the table for 1 minute. Then measure your heart rate manually:



2: Walking

Walk in place for 1 minute. Then measure your heart rate manually.



3: Sit-Ups

Do sit-ups in place for 1 minute. Then measure your heart rate manually.

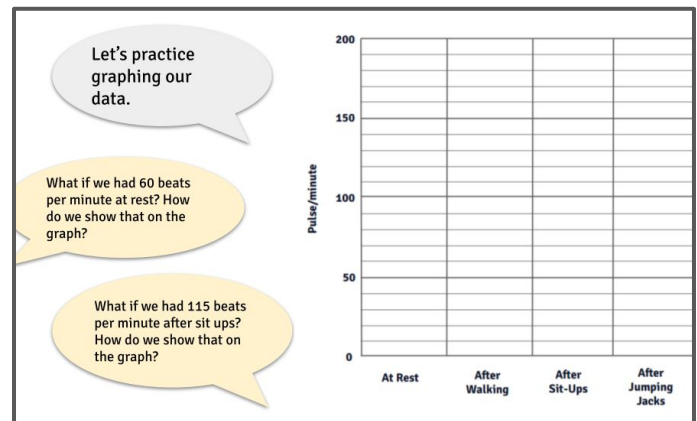


4: Jumping Jacks

Do jumping jacks for 1 minute. Then measure your heart rate manually.

Activity (Plotting Data on a Graph):

After youth have completed all activities and recorded their heart rates, discuss how to use **Worksheet 1** to plot their results on a single graph. Explain that the vertical axis (the y-axis) displays the pulse (number of heart beats per minute). This axis is labelled in intervals of 50, and horizontal lines on the graph mark intervals of 10. To help youth plot their data as accurately as possible, encourage them to use the horizontal lines. The horizontal axis (the x-axis) is labelled with the four different activities. Instruct youth to shade the rectangles in each column to represent their pulse after that activity.

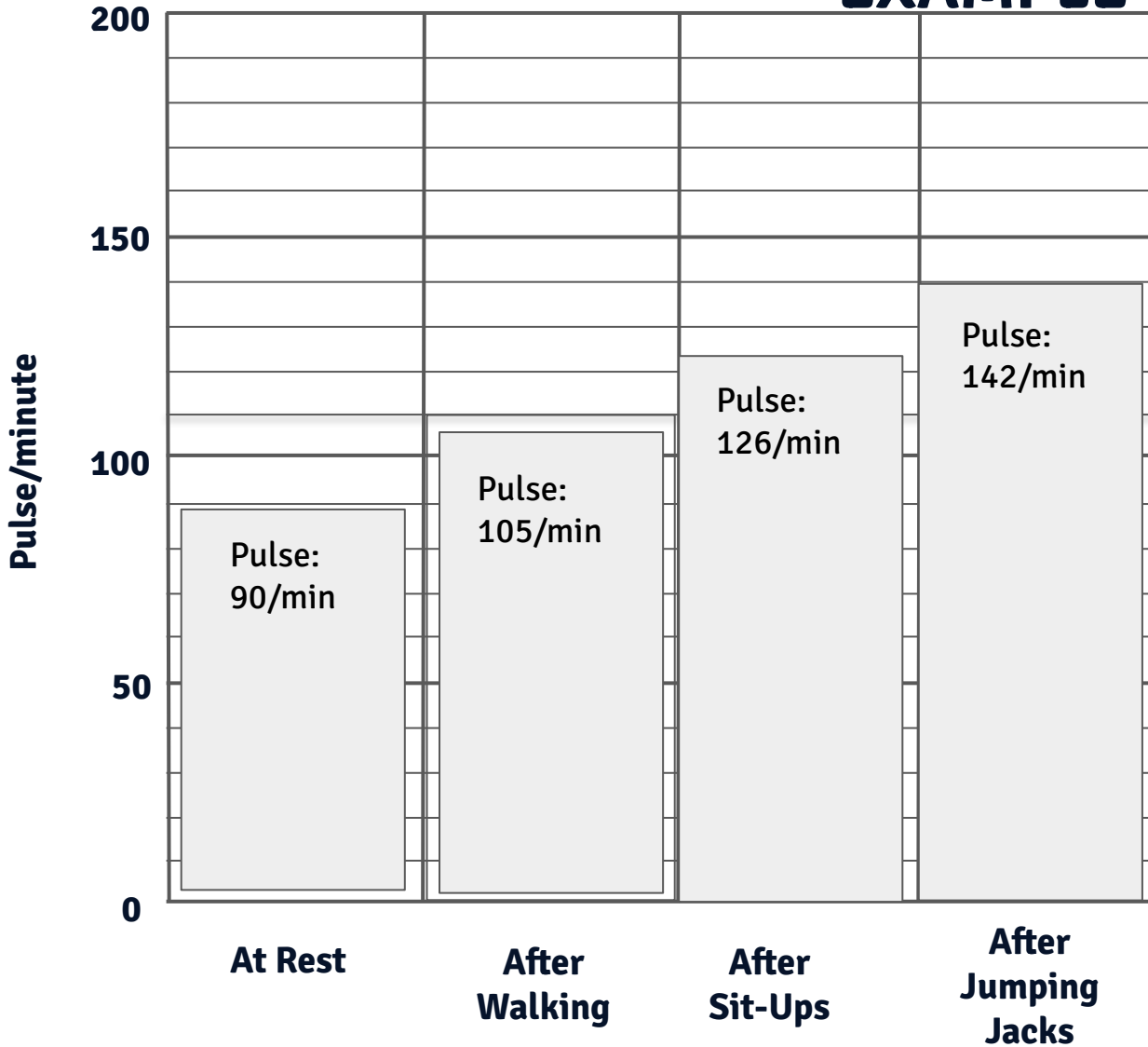


Measuring Heart Rate Youth Slides, Slide 7

Youth Worksheet 1

Activity 1 - Measuring Heart Rate (4 of 4)

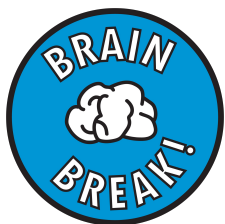
EXAMPLE





Reflection Questions:

Wrap up the activity with a discussion of driving questions for the lesson.

- Which activities result in the highest heart rate? Why?
- Why is it important to have a healthy heart and to be physically fit?



- Which activities result in the highest heart rate? Why?
- Why is it important to have a healthy heart and to be physically fit?

Activity 1

Activity 2 - Effort-Focused Goals (1 of 4)

Description: In this activity, youth watch a video of an inspirational baseball player who demonstrates effort and persistence both as a player and a coach. Youth discuss key life lessons they can take away from the video. Next, youth work with a partner to identify one goal they want to accomplish, and several things they can do to work towards that goal.

Growth Mindset Connection: Effort and persistence are keys to learning and improvement. Setting effort related goals is important. Effort goals focus on practice, persistence when things are challenging, and making progress towards a difficult task. Instead of setting goals related to a single outcome (“I want to be able to run a marathon”) try setting goals related to making improvements (“I am going to practice running at least 5 days a week, so I can build up my endurance”). Effort goals focus more on the process, and less on outcomes.

LAUNCH Video Discussion:

Show a video that tells the story of an inspirational baseball player - Jim Morris. As youth watch the video, ask them to think about what we can learn from this player’s story.

- Baseball's oldest rookie Jim Morris (00:00 - 08:12) <https://www.youtube.com/watch?v=TmOUAcGW1E>.

Ask youth to share their reactions to the video. Emphasize that improvement takes time and persistence is essential.

- What are key take away messages or “life lessons” from this video?
- Jim Morris talks about persistence and effort, even when things are hard or not going so well. Why do you think this is important?


Activity 2: Effort-Based Goals




Activity 2

Measuring Heart Rate Youth Slides, Slide 9

VIDEO: [Baseball's Oldest Rookie Jim Morris](#)



What are key “life lessons” from this video?

Activity 2

Measuring Heart Rate Youth Slides, Slide 10

Activity 2 - Effort-Focused Goals (2 of 4)


Partners:

Ask all youth to find a partner for a goal setting activity. In pairs, youth will brainstorm personal goals related to:

- athletics (skills or abilities that they want to improve), or
- school (understandings that they want to improve), or
- other activities (hobbies, clubs, after school activities)

Partners: Setting Goals

- Select 1 goal** (related to sports, school, or another activity) and share with a partner.
- Brainstorm **3 different things** you can do to **make progress** towards your goal.



Worksheet 2 - Effort-Focused Goals

1. Select 1 goal related to sports, school, or another activity. Record your goal.

2. Think of 3 things you can do to work towards your goal.

3. Write a fixed mindset statement and a growth mindset statement related to your goal.

My goal:

Three things I can do to work towards my goal:

- 1.
- 2.
- 3.

Fixed Mindset Statement about My Goal	Growth Mindset Statement about My Goal

Example:

My goal: Run longer distances without getting tired.

3 things I can do to work towards my goal:

1. Practice running at least 4 days every week.
2. Drink lots of water, and eat healthy food to give me more energy for running.
3. Do other exercises for endurance, like jumping rope.

Activity

Measuring Heart Rate Youth Slides, Slide 11

Ask youth to share their goal with a partner, and to brainstorm 3 different things they can do to keep making progress towards their goal. Youth can record their **goals** and their **effort statements** on **Worksheet 2**.

To help youth identify goal and specific things they can do to work towards the goal, provide an example of a goal that you are working towards in your life, and specific things that you are doing to make progress towards your goal.

Measuring Heart Rate

Worksheet 2 - Effort-Focused Goals

1. Select 1 goal related to sports, or school, or another activity. Record your goal.
2. Think of 3 things you can do to work towards your goal.
3. Write a fixed mindset statement and a growth mindset statement related to your goal.

My goal:

Three things I can do to work towards my goal:

- 1.
- 2.
- 3.

Fixed Mindset Statement about My Goal	Growth Mindset Statement about My Goal

Youth Worksheet 2

Whole Group Discussion:

Invite youth to share their goals and how they can work towards their goals.

Next, using a goal from one of the youth participants, discuss fixed mindset statements and growth mindset statements related to the goal.

- **Fixed mindset statements** focus on what you can't do or won't be able to do. They get in the way of working towards goals.
- **Growth mindset statements** focus on effort and persistence and the belief that you can make progress towards your goal.

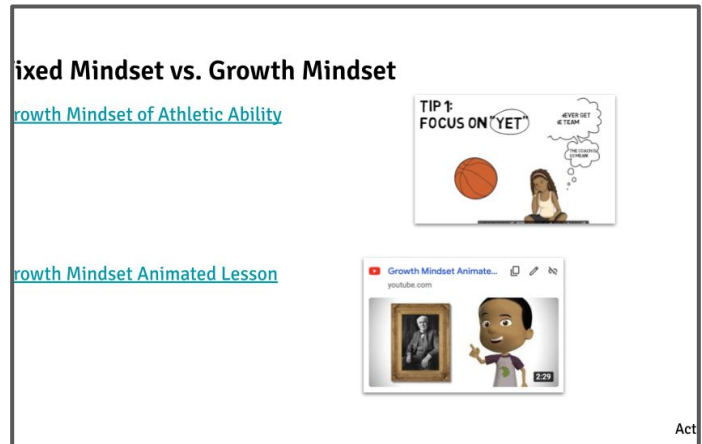
Activity 2 - Effort-Focused Goals (3 of 4)

Group Discussion:

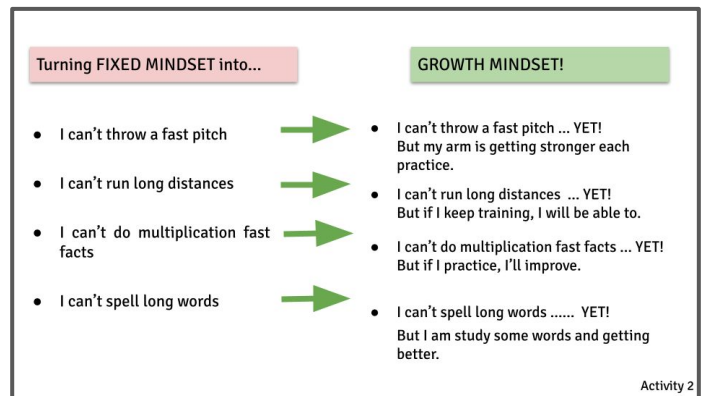
If youth need a review of growth mindset vs. fixed mindset concepts, share these videos. The first two videos work well for upper elementary and middle school youth. The last video is aimed at younger youth.

<https://www.youtube.com/watch?v=JfdoJxPjp1k&t=47s>
<https://www.youtube.com/watch?v=gObc2RMaFsc>
<https://www.youtube.com/watch?v=YWReJmixboQ&list=RDLVYG4t8SGQsvA&index=2>

Tell youth that one simple way to take a fixed mindset statement and turn it into a growth mindset statement is to add **YET** to the end of the statement to express that they are striving to accomplish something but need more time.



Measuring Heart Rate Youth Slides, Slide 13



Measuring Heart Rate Youth Slides, Slide 14

- **Instead** of, “I can’t throw a fast-pitch” **Say**, “I can’t throw a fast-pitch YET!”
- **Instead** of, “I can’t run long distances” **Say**, “I can’t run long distances YET!”
- **Instead** of, “I can’t do multiplication fast facts” **Say**, “I don’t know all the multiplication facts YET!”
- **Instead** of, “I can’t kick the ball far in kickball” **Say**, “I can’t kick the ball far YET!”

Activity 2 - Effort-Focused Goals (4 of 4)

Partner Activity: Fixed and Growth Mindset Statements :

Ask youth to share fixed and growth mindset statements related to their goal with a partner. Encourage youth to change each of their fixed mindset statements into a growth mindset statement by adding “YET!” to the end.

Partners: Setting Goals

3. Brainstorm a **fixed mindset** and a **growth mindset** statements related to your goal.

Worksheet 2 - Effort-Focused Goals

1. Select a goal something you want to work on related to health, or school, or another activity. Record your goal with a fixed mindset and a growth mindset.

2. Then, transform a fixed mindset statement and a growth mindset statement related to your goal.

My goal:

Three things I can do to work towards my goal:

- 1.
- 2.
- 3.

Fixed Mindset Statement about My Goal **Growth Mindset Statement about My Goal**

Example:

Fixed Mindset Statement	Growth Mindset Statements
Every time I run for more than 5 minutes, I am exhausted. I am not built for running! I won't ever be able to run longer distances.	I can run for 3-4 minutes without getting tired. That is a good start! I am going to try to run a little longer each week. I can't run for longer distances YET, but I will be able to soon.

Activity

Measuring Heart Rate Youth Slides, Slide 15

My goal: I want to be able to run longer distances without getting so tired.	
Three things I can do to work towards my goal:	
<ol style="list-style-type: none"> 1. Practice running at least 4 days every week. 2. Drink lots of water, and eat healthy food to give me more energy. 3. Do other exercises to build endurance, like jumping rope. 	
Fixed Mindset Statements	Growth Mindset Statements
I am just not built for running! I won't ever be able to run long distances.	I can't run for more than 5 minutes YET, but I can run for 3 minutes. I am going to run a little longer each week.

Reflection Questions:

Wrap up the activity with a discussion of driving questions for the lesson.

- Why is it important to set goals for yourself?
- How can effort and persistence help you work towards your goals?

- Why is it important to set goals for yourself?
- How can effort help you work towards your goals?

Activity

Measuring Heart Rate Youth Slides, Slide 16

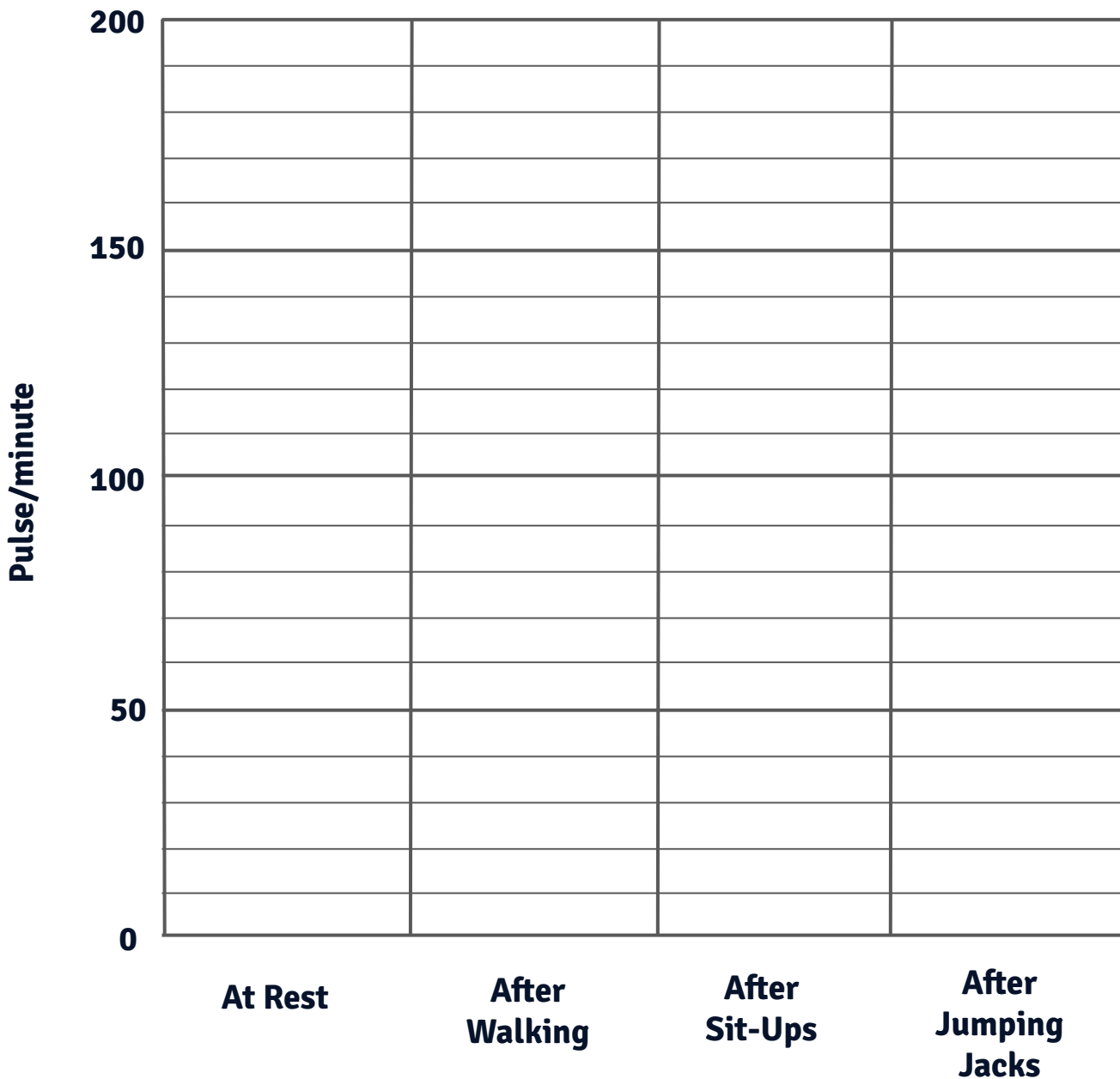
Worksheet 1 - Plotting Heart Rate For Various Activities

RESTING (1 minute): Pulse _____/minute (after resting/sitting)

WALKING (1 minute): Pulse _____/minute (after walking)

SIT-UPS (1 minute): Pulse _____/minute (after sit-ups)

JUMP/JOG (1 minute): Pulse _____/minute (after jumping or jogging)



Worksheet 2 - Effort-Focused Goals

1. Select 1 goal related to sports, or school, or another activity. Record your goal.
2. Think of 3 things you can do to work towards your goal.
3. Write a fixed mindset statement and a growth mindset statement related to your goal.

My goal:

Three things I can do to work towards my goal:

1.

2.

3.

**Fixed Mindset Statement
about My Goal**

**Growth Mindset Statement
about My Goal**