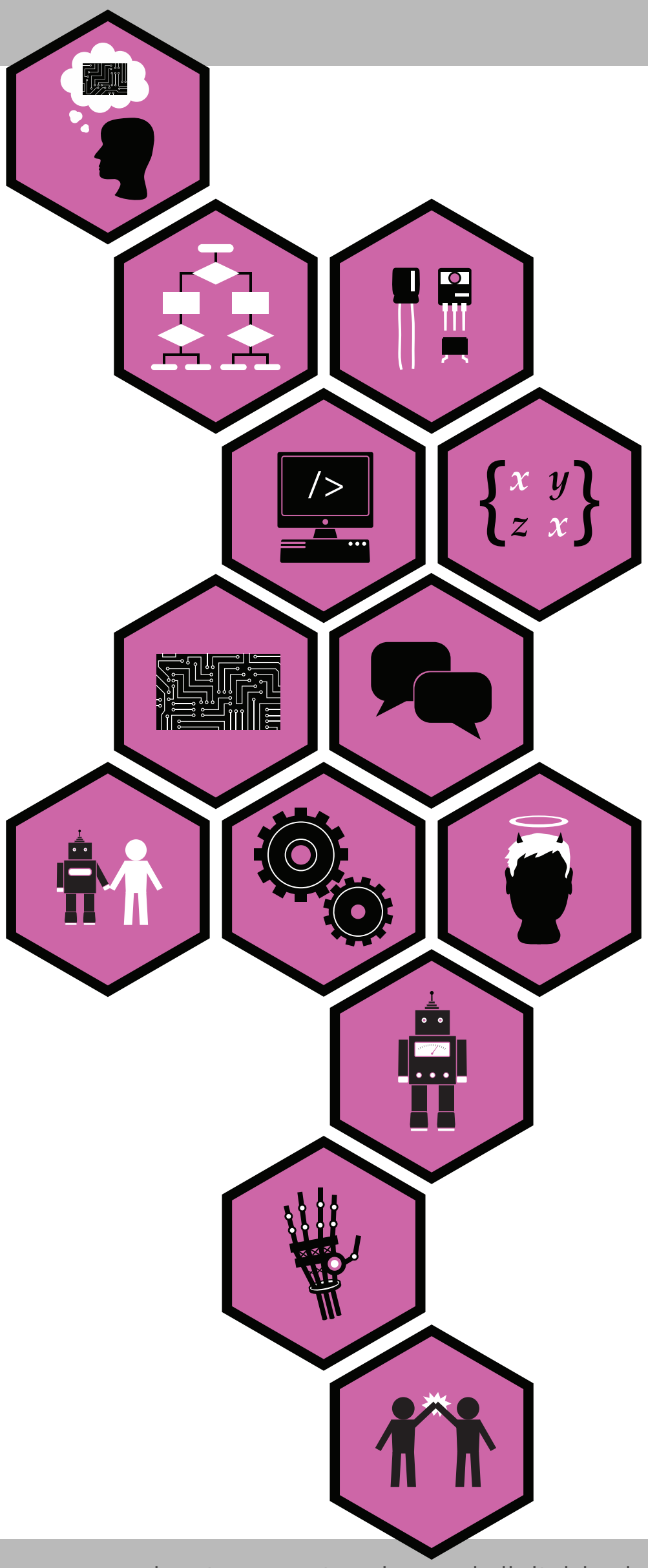
ROBOTICS combines technical training in computer programming, fabrication, and electronics with design-thinking, iterative problem-solving, and communication.

remake learning COMPETENCIES



KNOWLEDGE

Circuits
The learner understands the purposes of basic electronics components, circuit theory, schematic symbols and drawings, and evaluates manufacturing feasibility.

Design Process
The learner understands the process of design planning, objective analysis, iteration, and analytic design breakdown.

Materials & Their Characteristics
The learner understands basic mechanical components and measurement units. The learner also knows the properties of various tools and the physical characteristics of different materials.

Programming Languages
The learner understands the syntax, functions, and libraries of a given specific programming language such as Scratch, C++, Python, or Java. The learner programs basic algorithms and evaluates program correctness.

Systems Thinking
The learner identifies parts of a robot as part of a larger system. The learner analyzes block diagrams of abstracted systems and understands the interactions between subsystems.

SKILLS

Circuit Board Construction
The learner assembles a circuit board safely, fully, and according to a design plan, using required tools and processes.

Communication
The learner communicates clearly with peers, mentors, and others about concepts, goals, decisions, and processes.

Designing for Human-Robot Interaction
The learner identifies a set of human needs and given the appropriate social robot, designs and implements an appropriate human-robot interaction.

Engineering
The learner uses required design tools such as simple mechanical and electronic CAD software to fully design a robot from scratch, including mechanical, electrical, and software systems.

Ethics
The learner investigates and explains how automation affects cultures and the world.

Fabricating
The learner uses required tools and processes like 3D printing, precision machining, and welding to fabricate all components of a robot and assembles those components into a working system.

Programming
The learner formulates a robot behavior plan including scripted actions and feedback response, programs a working robot to implement said plan, and develops test procedures for evaluating the robot's performance.

DISPOSITIONS

Collaboration
The learner works amicably with others to overcome conflicts and differences of opinion to develop work products and solve problems. The learner recognizes individual strengths and weaknesses and different leadership styles.

Learn more about competencies and digital badges at **remakelearning.org/competencies.**

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