Domain: Expressions and Equations
6.EE.A: Apply and extend previous understandings of arithmetic to algebraic expressions.
Calculator Availability: Yes

Use the information to answer the question.

The formula $T = 0.7(220 - x)$ can be used to determine a person's target heart rate during exercise (T), in beats per minute, given the person's age (x), in years.

Based on the formula, what is the target heart rate for a person who is 30 years old? Enter the answer in the box.

[_____] beats per minute

Alignment: 6.EE.A.2c: Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas $V = s^3$ and $A = 6 s^2$ to find the volume and surface area of a cube with sides of length s = 1/2.*

The context represents a realistic real-world situation involving evaluating expressions at specific values for their variables, which is an important application of mathematics. This item requires students to evaluate an unfamiliar expression at a specific value for the variable.

Coherence: In grade 3, students learned about relationships between operations and received an informal introduction to the use of parentheses.[3.OA.B.5] In grade 5, students became more familiar with grouping symbols with numerical expressions.[5.OA.A.1] In grade 6, the order of operations is extended to algebraic expressions. In evaluating the expression in this item, students need to know they must subtract first before multiplying by 0.7, unless 0.7 is distributed first. In grade 7, students will extend this work to represent and solve real-world and mathematical problems of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers.[7.EE.B.4]

Rigor: This item attends to procedural skill and application. Students use substitution and then perform a grade-level procedural computation by performing the operations in the correct order to arrive at the solution. The context is provided to give meaning to the concept of evaluating expressions, and the application of mathematics is directly indicated in a real-world scenario.

Answer Key:

Use the information to answer the question.

The formula $T = 0.7(220 - x)$ can be used to determine a person's target heart rate during exercise (T), in beats per minute, given the person's age (x), in years.

Based on the formula, what is the target heart rate for a person who is 30 years old? Enter the answer in the box.

[133] beats per minute

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