

Math 200 - Quiz 1

January 26, 2011

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (1 point) Clearly state, in order, the steps of Polya's problem-solving process.

- ① UNDERSTAND THE PROBLEM
- ② DEVISE A PLAN
- ③ CARRY OUT THE PLAN
- ④ LOOK BACK

2. (1 point) When using the problem-solving process which one of these strategies WOULD NOT BE considered part of understanding the problem?

- (a) Look for a pattern. ← THIS IS PART OF DEVISING A PLAN
- (b) State the problem in your own words.
- (c) Read and reread the problem.
- (d) Determine what information is irrelevant.

3. (1 point) State two different strategies for carrying out the plan.

- ① IMPLEMENT THE PLAN YOU DEVISED
- ② KEEP AN ACCURATE RECORD OF YOUR WORK
- ③ CHECK YOUR WORK AT EACH STEP

4. (2 points) A compass and ruler together cost \$4. The compass costs 90 cents more than the ruler. How much would one compass and two rulers cost?

Approach #1: Algebra

LET r = COST OF RULER IN DOLLARS

C = COST OF COMPASS IN DOLLARS

$$C = r + 0.90$$

$$C + r = 4$$

SUBSTITUTION GIVES

$$r + 0.90 + r = 4$$

$$2r + 0.90 = 4$$

$$2r = 3.10$$

$$r = 1.55$$

$$C = r + 0.90 = 2.45$$

ONE COMPASS AND TWO RULERS

$$\text{COST } 2.45 + 2(1.55) = 5.55$$

ANSWER IS \$5.55

Approach #2: GUESS & CHECK WITH TABLE

I'll make a table of the cost of 1 ruler and 1 compass for various ruler prices. Since the compass costs 90¢ more than the ruler, really only the compass cost is unknown

<u>RULER</u>	<u>COMPASS</u>	<u>TOTAL COST</u>
0	0.90	\$ 0.90
\$ 1.00	\$ 1.90	\$ 2.90
\$ 1.50	\$ 2.40	\$ 3.90

Way too small! Let's jump to ruler = \$1.00

Still way too small!

Let's try ruler = \$1.50

Very close! Increasing ruler to \$1.55 will work.

\$ 1.55	\$ 2.45	\$ 4
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↑
ONE RULER COSTS \$1.55
ONE COMPASS COSTS \$2.45

2 RULERS AND 1 COMPASS COST

$$2(1.55) + 2.45 = \underline{\underline{\$ 5.55}}$$