

PROBLEM SOLVING

Set B

Solutions

There are many commercial resources available to challenge students to become better problem solvers. This is a collection of some of our favorite problems.

You might consider allowing students to work with partners. Many of these problems are best solved with calculators. All of these problems lend themselves to students telling and writing about their thinking.

Consider expanding this problem solving deck by adding your own problems on the backs of the cards or photocopying the blank master we have included for you.

We hope you will share your great problems with us. Send them to :

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1) Answers may vary. Without sales tax, **six**; with a 6% tax **five**.

2) popsicles nutty buddies sandwiches

24	0	0
20	1	2
16	2	4
12	3	6
8	4	8
4	5	10
0	6	12

If money is not all spent other possibilities exist.

3) Yes, \$0.62

4) Take 5¢ from the tallest stack and place them in the middle.

5) 13

6)

	50¢	25¢	10¢	5¢	1¢
0	0	10	0	0	0
0	4	0	0	0	0
2	0	0	0	0	0
1	1	2	1	0	0
1	1	1	3	0	0
1	1	0	5	0	0
1	1	2	0	5	0
1	1	0	3	10	0
1	0	4	2	0	0
1	1	1	1	10	0
1	1	1	2	5	0

	50¢	25¢	10¢	5¢	1¢
1	0	4	0	10	0
1	0	5	0	0	0
1	2	0	0	0	0
1	0	2	6	0	0
0	3	0	5	0	0
0	3	2	1	0	0
0	3	1	3	0	0
0	3	2	0	5	0
0	3	1	2	5	0
0	2	5	0	0	0
0	2	4	2	0	0
0	2	4	1	5	0
0	2	3	4	0	0
0	2	3	3	5	0
0	2	2	6	0	0
0	2	2	5	5	0
0	1	7	1	0	0
0	1	7	0	5	0
0	1	6	3	0	0
0	1	6	2	5	0
0	1	5	5	0	0
0	1	5	4	5	0
0	1	4	7	0	0
0	1	3	9	0	0
0	1	2	11	0	0
0	1	1	13	0	0
0	0	9	2	0	0
0	0	8	4	0	0
0	0	7	6	0	0
0	0	6	8	0	0

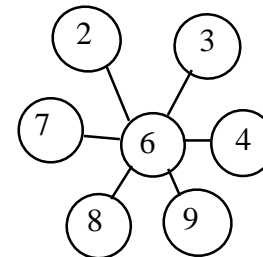
50¢	25¢	10¢	5¢	1¢
0	0	5	10	0
1	0	2	5	5
1	0	3	4	0
1	0	3	3	5

and there are probably more!

7)

<u>erasers</u>	<u>pencils</u>	<u>paper</u>	<u>markers</u>
10	0	0	0
0	5	0	0
8	1	0	0
7	1	0	0
6	0	0	1
6	2	0	0
5	1	1	0
4	1	0	1
4	3	0	0
4	0	2	0
3	2	1	0
3	0	1	1
2	4	0	0
2	0	0	2
2	1	2	0
1	1	1	1
1	0	3	0
1	3	1	0

8) 6, 7, 8, and 9 in the center will yield solutions.
Here's one:



9) Answers will vary. Ex. 439-**5718** Largest: 8751,
Smallest:1578, Difference: 8751 - 1578 = 7173

10) 8 lbs; 20 lbs

11) one-half hour

12) <u>quarters</u>	<u>dimes</u>	<u>nickels</u>
2	0	0
1	2	1
1	1	3
1	0	5
0	5	0
0	4	2
0	3	4
0	2	6
0	1	8
0	0	10

13) <u>TD</u>	<u>FG</u>	<u>PA</u>	<u>PA(conversion/ safety)</u>
2	0	0	0
1	2	0	0
1	1	1	1
0	4	0	0
0	0	0	6
1	0	0	3

14) Answers will vary. Since not every calculator uses algebraic logic, students should verify with a demonstration.

15) $\frac{12}{1}$	$\frac{9}{x}$	$\frac{6}{1}$	$\frac{3}{1}$
x	2	x	1

Other possible scores with three darts: 9, 12, 15, 18, 21, 24, 27, 30, 36.

16) Yes. Doses at 2:20, 3:05, 3:50, 4:35. 5:20, 6:05.

17) <u>aggies</u>	<u>migs</u>	<u>change</u>
1	10	6¢
2	9	10¢
4	8	0¢
5	7	4¢
6	6	8¢
7	5	12¢
9	4	2¢
10	3	6¢
11	2	10¢
13	1	0¢
14	0	4¢

18) Answers will vary; ex.: 236 - 197, 234 - 199 etc.

19) Two possibilities: 1,5,9; 3,4,8; 2,6,7 or 2,4,9; 3,5,7; 1,6,8. The sum will always be 15.

20) Answers will vary.

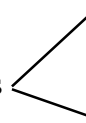
21) Seven trikes, 12 bikes

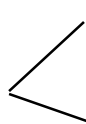
22) 3 pennies, 6 nickels

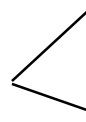
23) 8 choices

24)	<u>3-pointers</u>	<u>2-pointers</u>
	11	2
	9	5
	7	8
	5	11
	3	14
	1	17

25) 6 choices

corn flakes  orange juice
apple juice

oatmeal  orange juice
apple juice

wheat chunks  orange juice
apple juice

26) 11 weeks

27) ten

28) 4 small, 3 large; 16 students; 42 students

29) $\boxed{26}$, $\triangle 19$, $\boxed{27}$, $\odot 14$

30) 12

31) 65

32) 26, 20, 14; subtract 6
7, 5; add 3, subtract 2

33) 3 dimes and 4 nickels; \$1.75

34) 49

35) Answers will vary.

36) 1

37) 96, 120, 144, 168

38) pour 7 cups into the 10 cup measure twice,
when the 10 if full 4 cups will be left in the
7 measure

39) 28

40) Answers will vary.

41) Answers will vary.

42) Answers will vary. Here are some:
 $975 + 864$; or $964 + 875$, etc. $14 + 20 + 35$;
or $30 + 15 + 24$, etc.

43) six

44) Answers will vary.

45) 24, 42, 56, 65, 2456, 4256, 2465, 2465, 5624,
5642, 6524, 6542

46) January 16th

47) 33; 632×54

48) D, it is made with a straight line; answers
will vary.

49) Answers will vary; 4 triangles, 17 rectangles

50) 4th block

51) 6 cars - 34 people; if there are 25 students 5
cars will be sufficient, 30 people

52) Answers will vary.

53) 64¢

54)

<u>quarter</u>	<u>dimes</u>	<u>nickels</u>
1	1	1
1	0	3
0	4	0
0	1	6
0	2	4
0	3	2
0	0	8

55) 2 nickels and 1 dime

56) 84 480 pennies If 1 penny is three-fourths
of an inch, then 16 pennies equal one foot.
there are 5 280 feet in a mile or $16 \times 5\ 280$
pennies in a mile.

57) 91¢

58) Impossible. 12 quarters = $\$3.00$ and she has
fewer than 12 coins!

59) 39 tiles

60) 120 cards

61) 8 red and 4 yellow

62) 3 quarters ~ 7 cm so 12 quarters ~ 30 cm
or \$4.00
7 dimes ~ 12 cm so 35 dimes ~ 60 cm or
\$3.50

63) Stuart, Alex, Ross, Jerry

64)

<u>WholePizzas</u>	<u>Half Pizzas</u>
3	1
2	3
1	5
0	7