

5th – 6th Grade
Regional Math Meet Tests
2016

- **Individual Problems**
 - Event 1: Problem Solving (No Calculator)
 - Event 2: Problem Solving (With Calculator)
 - Event 3: Mathematical Reasoning
 - Event 4: Mental Math
- **Team Problems**
 - Event 5: Team Problems
- **Tie Breaker Question**

Name: _____

School Team: _____

Circle your final
answer!

Event 1: Computations Without Calculator- 20 points total

Part I (2 points each)

Remember to simplify all fractions if able!

1. $-5 + 10(6 - 14)$

2. $\frac{-300}{412} + \frac{217}{103}$

3. $\frac{6}{17} \div \frac{3}{51}$

4. $16 - 82 + 14 \div 7$

5. Give the reciprocal of $3\frac{5}{7}$

Name: _____ School Team: _____

Circle your final
answer!

Event 1: Computations Without Calculator- 20 points total

Part II (2 points each)

1. 6.53×7

2. $39.24 \div 3$

3. Find what ? is if $\frac{4}{7} = \frac{16}{?}$

4. Find 75% of 3.5

5. If $x = 3$ and $y = 4$, find $xy - (3x + 2y)$

Name: _____

School Team: _____

Circle your final
answer!

Event 2: Computations With Calculator- 25 points total

Consumer Math (5 points each)

1. A woman wants to purchase a pair of shoes for \$18.69. If sales tax is 5.7% and she pays with a \$20 bill, find the amount of change the clerk should give. Round all amounts to the nearest cent.

2. Plan A phone company charges \$35 per month plus 2 cents for each text message. Plan B phone company charges \$25 per month plus 5 cents for each text message. Assuming an average of 30 days in a month, if you plan to send 10 text messages per day which is the better plan?

3. Brand C cereal is sold in two different sizes. Large boxes hold 18.4 ounces and sell for \$4.27. Small boxes hold 16.2 ounces and sell for \$3.87. Which is the better buy, a large box or a small box?

4. For every \$15 that a company earned during the month of February, it kept \$12 and the rest was given to charity. If \$1500 was given to charity, how much money did the company make?

5. An "All You Can Eat" buffet charged \$14.97 per adult and \$11.93 per child. It also charged \$10 per kilogram of food, or part thereof, wasted. The bill for a table of 6 adults and 2 children was \$133.68. What was the maximum possible weight of the food wasted by this table?

me: _____ School Team: _____

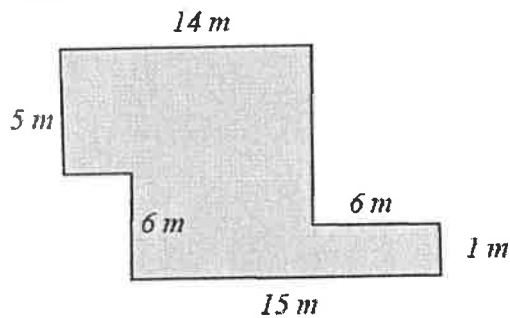
Event 3: Mathematical Reasoning With Calculator- 35 points total

Circle your final
answer!

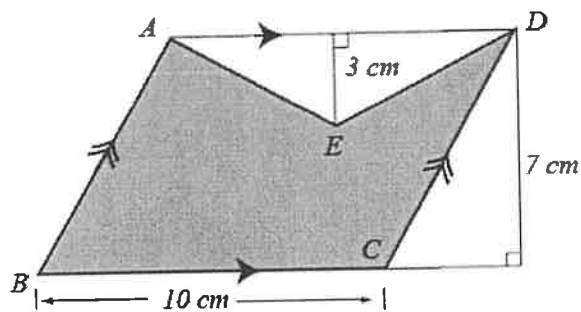
Part I: Geometry (7 points each)

Remember to use labels when appropriate

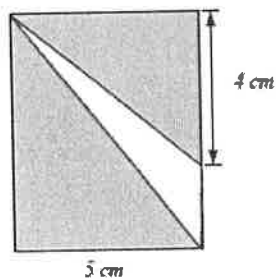
1. Find the area of the figure below.



2. Find the area of the shaded region.



3. The rectangle below has an area of 60cm^2 . Find the area of the shaded region.



Name: _____ School Team: _____

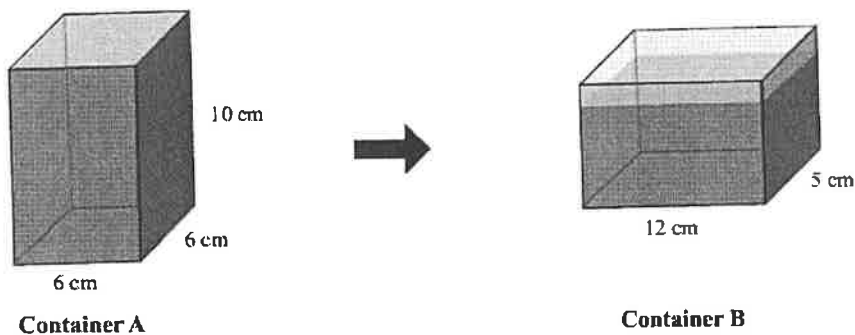
Event 3: Mathematical Reasoning With Calculator- 35 points total

Circle your final
answer!

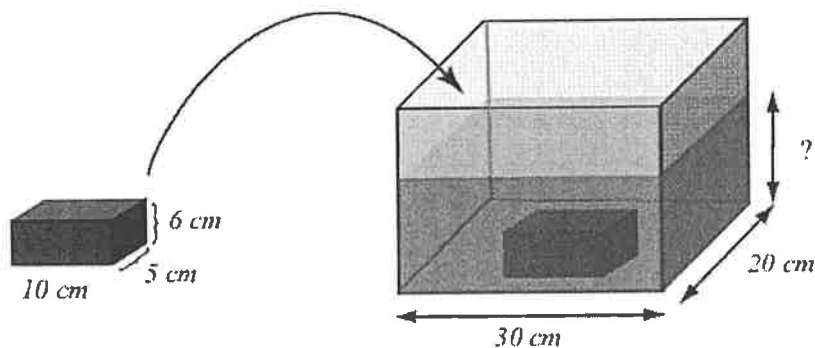
Part II: Geometry (7 points each)

Remember to use labels when appropriate

4. You have two rectangular tanks as shown below. Container A is filled with water, then all the water in Container A is poured into Container B. Find the height of the water in Container B.



5. A rectangular tank was filled with water to a depth of 12 cm. The solid metal box shown below was then placed in the tank. Find the new height of the water in the tank.



Name: _____ School Team: _____

Event 4: Mental Math (no calculator)- 20 points total
(2 points each)

Example: _____

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

Name: _____

School Team: _____

Circle your final
answer!

Event 5: Team Problems (with calculator)- 100 points total

Part 1: Measurement and Logical Reasoning (8 points each)

Remember to label as necessary!

1. An alien planet has landed in your classroom. He loudly and proudly explains that he is 15 glocks tall. You measure him and learn that he measures 3 feet, 9 inches tall.

a) How many inches are in 1 glock?

b) How many glocks are in 1 inch?

c) The alien has a brother who measures 18 glocks in height. Find the alien brother's height in inches.

d) The alien informs you that he expects to be 20 glocks tall when he reaches his full adult height. How many feet and inches does he have left to grow?

e) You measure the alien's spaceship and find it to have a circumference of 36 feet. What is the circumference of the alien's spaceship in glocks?

Name: _____ School Team: _____

Circle your final
answer!

Event 5: Team Problems (with calculator)

Part 2: Probability (5 points each)

Remember to simplify all fractions if able!

2. A deck of cards typically has 52 cards in four suits: Hearts, Diamonds, Clubs, and Spades. Hearts and Diamonds are red; Clubs and Spades are black. Each suit has 13 cards: 1 each of the numbers 2-10, a jack, a queen, a king, and an ace.
 - a) What is the probability of randomly selecting a black 4?

 - b) What is the probability of randomly selecting a black card?

 - c) Alex selects two black cards and removes them from the pile. What is the probability that the next card he selects will be red?

 - d) Kendra removes 8 cards from the pile. 2 of them were Clubs, 4 were Hearts, and 2 were Diamonds. What is the probability that the next card she selects will be a Club?

Name: _____ School Team: _____

Circle your final
answer!

Event 5: Team Problems (with calculator)

Part 3: Ratios (5 points each)

Remember to simplify all ratios if able!

3. At a bus stop, there are 14 men, 12 women, 5 girls, and 3 boys.
 - a) What is the ratio of the number of children to the number of adults?
 - b) What is the ratio of the number of women to the number of boys?
 - c) If some more girls arrive at the bus stop and the ratio of the number of adults to the number of children is now 2:1, find the number of girls who arrived.
 - d) All of the people originally at the bus stop board a bus. The ratio of the number of men to the number of women to the number of children on the bus is 3:2:1. If there were no children already on the bus, find the smallest number of men that could have been on the bus before the new people boarded.

Name: _____ School Team: _____

Circle your final
answer!

Event 5: Team Problems (with calculator)

Part 4: Percent Problem Solving (5 points each)

4.

- a) 20% of a class of 40 students play volleyball, 15% of the class plays basketball, 35% of the class plays football and 50% of the rest of the students play soccer. If no student plays 2 sports, how many students play soccer?

- b) Tyrone has 20% more balloons than Riyah. If Tyrone gives 10 balloons to Riyah, they will have the same number of balloons. How many balloons does Riyah have?

- c) August and Gavin collect toy cars. August has 320% more toys cars than Gavin. If Gavin has 60 toy cars, how many toy cars does August have?

- d) Madlyn has 15% more flowers in her garden than April has in her garden. If Madlyn has 46 flowers in her garden, how many flowers does April have in her garden?

Name: _____

School Team: _____

Circle your final
answer!**Event 1: Computations Without Calculator- 20 points total**

Part I (2 points each)

1. $-5 + 10(6 - 14) = -5 + 10(-8)$

$= -5 + 80$

$= -85$

2. $\frac{-300}{412} + \frac{217}{103} = \frac{-75}{103} + \frac{217}{103} = \frac{142}{103} \text{ or } 1\frac{39}{103}$

3. $\frac{6}{17} \div \frac{3}{51} = \frac{6}{17} \cdot \frac{51}{3} = 6$

4. $16 - 82 + 14 \div 7 = -66 + 2 = -64$

5. Give the reciprocal of $3\frac{5}{7}$

$3\frac{5}{7} = \frac{26}{7}$

$\frac{7}{26}$

Name: _____ School Team: _____

Circle your final
answer!**Event 1: Computations Without Calculator- 20 points total**

Part II (2 points each)

1. 6.53×7

$$\begin{array}{r} 6.53 \\ \times 7 \\ \hline 45.71 \end{array}$$

(45.71)

2. $39.24 \div 3$

$$\begin{array}{r} 13.08 \\ 3 \overline{) 39.24} \end{array}$$

(13.08)

3. Find what ? is if $\frac{4}{7} = \frac{16}{?}$

$$\frac{4}{7}, \quad \frac{4}{4} = \frac{16}{28}$$

(28)

4. Find 75% of 3.5

$$\begin{array}{r} 12 \\ 75 \\ \times 3.5 \\ \hline 375 \\ 2250 \\ \hline 2625 \end{array}$$

(2.625)

5. If $x = 3$ and $y = 4$, find $xy - (3x + 2y)$

$$\begin{aligned} 3 \cdot 4 - (3 \cdot 3 + 2 \cdot 4) &= 12 - (9 + 8) \\ &= 12 - 17 \\ &= (-5) \end{aligned}$$

Name: _____

School Team: _____

Circle your final
answer!**Event 2: Computations With Calculator- 25 points total**
Consumer Math (5 points each)

1. A woman wants to purchase a pair of shoes for \$18.69. If sales tax is 5.7% and she pays with a \$20 bill, find the amount of change the clerk should give. Round all amounts to the nearest cent.

$$0.057 \times \$18.69 = 1.06533$$

$$18.69 + 1.07 = 19.76$$

$$20 - 19.76 = 0.24$$

24¢ or \$0.24

2. Plan A phone company charges \$35 per month plus 2 cents for each text message. Plan B phone company charges \$25 per month plus 5 cents for each text message. Assuming an average of 30 days in a month, if you plan to send 10 text messages per day which is the better plan?

$$\text{Plan A: } 35 + .02(10)(30) = 41$$

$$\text{Plan B: } 25 + .05(10)(30) = 40$$

Plan B

3. Brand C cereal is sold in two different sizes. Large boxes hold 18.4 ounces and sell for \$4.27. Small boxes hold 16.2 ounces and sell for \$3.87. Which is the better buy, a large box or a small box?

Find price
per ounce

$$\text{Large box: } \frac{4.27}{18.4} = .232065...$$

$$\text{Small box: } \frac{3.87}{16.2} = .23888$$

Large box

4. For every \$15 that a company earned during the month of February, it kept \$12 and the rest was given to charity. If \$1500 was given to charity, how much money did the company make?

$$\$1500 \text{ is } 500 \text{ groups of } 3$$

$$\text{So the company made } 500(\$15) = \$7500$$

\$7500

5. An "All You Can Eat" buffet charged \$14.97 per adult and \$11.93 per child. It also charged \$10 per kilogram of food, or part thereof, wasted. The bill for a table of 6 adults and 2 children was \$133.68. What was the maximum possible weight of the food wasted by this table?

$$14.97(6) + 11.93(2) = 113.68$$

$$20 \div 10 = 2$$

$$133.68 - 113.68 = 20$$

2kg

Name: _____ School Team: _____

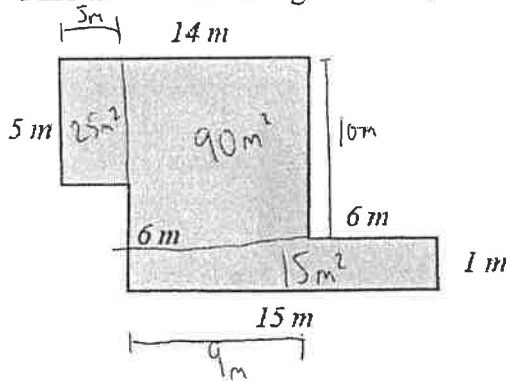
Event 3: Mathematical Reasoning With Calculator- 35 points total

Circle your final answer!

Part I: Geometry (7 points each)

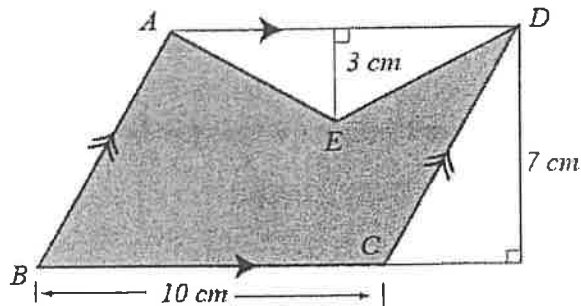
Remember to use labels when appropriate

1. Find the area of the figure below.



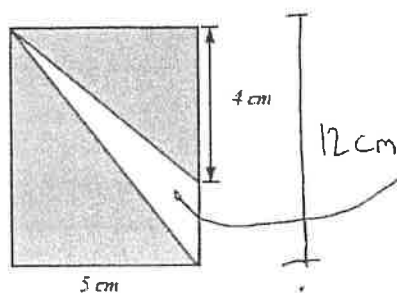
$$90\text{m}^2 + 25\text{m}^2 + 15\text{m}^2 = 130\text{m}^2$$

2. Find the area of the shaded region.



$$\begin{aligned} \text{Area of Paragon} - \text{Area of } \triangle \\ 10\text{cm} \cdot 7\text{cm} - \frac{1}{2}(10\text{cm})(3\text{cm}) = \\ 70\text{cm}^2 - 15\text{cm}^2 = \\ 55\text{cm}^2 \end{aligned}$$

3. The rectangle below has an area of 60cm^2 . Find the area of the shaded region.



$$60 \div 5 = 12$$

$$\begin{aligned} \text{Area of shaded: Area } \square - \text{Area } \triangle \\ 60\text{cm}^2 - \frac{1}{2}(8\text{cm})(5\text{cm}) = \\ 60\text{cm}^2 - 20\text{cm}^2 = \\ 40\text{cm}^2 \end{aligned}$$

Name: _____ School Team: _____

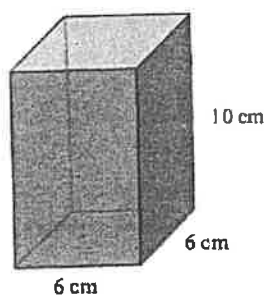
Event 3: Mathematical Reasoning With Calculator- 35 points total

Circle your final answer!

Part II: Geometry (7 points each)

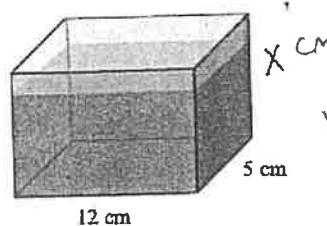
Remember to use labels when appropriate

4. You have two rectangular tanks as shown below. Container A is filled with water, then all the water in Container A is poured into Container B. Find the height of the water in Container B.



Container A

$$\text{Volume: } (6 \times 6 \times 10) \text{ cm}^3 = 360 \text{ cm}^3$$



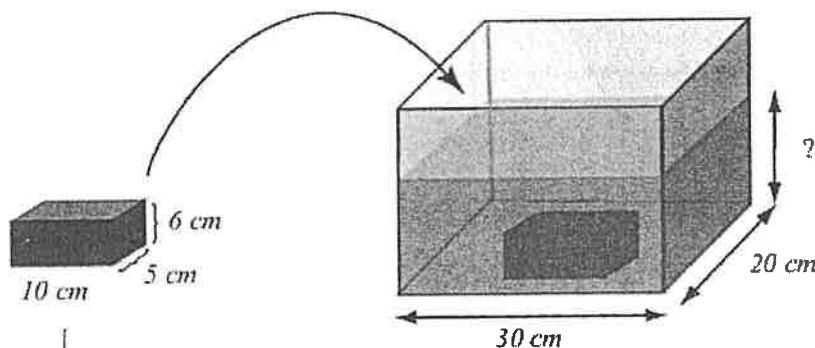
Container B

$$\text{Volume: } (12 \times 5 \times x) \text{ cm}^3 = 60x \text{ cm}^3$$

$$60x \text{ cm}^3 = 360 \text{ cm}^3$$

$$x = 6 \text{ cm}$$

5. A rectangular tank was filled with water to a depth of 12 cm. The solid metal box shown below was then placed in the tank. Find the new height of the water in the tank.



$$\text{Volume } (10 \times 5 \times 6) \text{ cm}^3 = 300 \text{ cm}^3$$

$$30 \times 20 \text{ cm}^2 = 600 \text{ cm}^2$$

Since the tank is 600 cm^2 for every 1 cm of height, the block will make the water rise $\frac{1}{2}$ cm

$$12.5 \text{ cm} \text{ or } 12\frac{1}{2} \text{ cm}$$

Name: _____ School Team: _____

Event 4: Mental Math (no calculator)- 20 points total
(2 points each)

Example: 23 (no points)

1) -4

2) 150m²

3) 2100

4) $\frac{9}{14}$

5) 318

6) 151

7) $\frac{1}{10}$ or 0.1

8) 72

9) 16

10) 85

Name: _____

School Team: _____

Circle your final
answer!**Event 5: Team Problems (with calculator)- 100 points total**

Part 1: Measurement and Logical Reasoning (8 points each)

Remember to label as necessary!

1. An alien planet has landed in your classroom. He loudly and proudly explains that he is 15 glocks tall. You measure him and learn that he measures 3 feet, 9 inches tall.

- a) How many inches are in 1 glock?

$$3\text{ ft} + 9\text{ in} = 36\text{ in} + 9\text{ in} = 45\text{ in}$$

$$15\text{ glocks} \rightarrow 45\text{ in}$$

$$5\text{ glocks} \rightarrow 15\text{ in}$$

$$1\text{ glock} \rightarrow 3\text{ in}$$

3 in

- b) How many glocks are in 1 inch?

 $\frac{1}{3}\text{ glock}$

- c) The alien has a brother who measures 18 glocks in height. Find the alien brother's height in inches.

$$3 \times 18 = 30 + 24 = 54$$

54 in

- d) The alien informs you that he expects to be 20 glocks tall when he reaches his full adult height. How many feet and inches does he have left to grow?

$$20 - 15 = 5\text{ glocks left to grow}$$

1 ft, 3 in

$$5 \times 3 = 15$$

15 in is 1 ft, 3 in

- e) You measure the alien's spaceship and find it to have a circumference of 36 feet. What is the circumference of the alien's spaceship in glocks?

$$36\text{ ft} = 12\text{ in} \times 36 = 432\text{ in}$$

144 glocks

$$\frac{432}{3} = 144$$

Name: _____ School Team: _____

Circle your final
answer!

Event 5: Team Problems (with calculator)

Part 2: Probability (5 points each)

Remember to simplify all fractions if able!

2. A deck of cards typically has 52 cards in four suits: Hearts, Diamonds, Clubs, and Spades. Hearts and Diamonds are red; Clubs and Spades are black. Each suit has 13 cards: 1 each of the numbers 2-10, a jack, a queen, a king, and an ace.

- a) What is the probability of randomly selecting a black 4?

$$\frac{2}{52} = \frac{1}{26}$$

- b) What is the probability of randomly selecting a black card?

$$\frac{26}{52} = \frac{1}{2}$$

- c) Alex selects two black cards and removes them from the pile. What is the probability that the next card he selects will be red?

$$\frac{26}{50} = \frac{13}{25}$$

- d) Kendra removes 8 cards from the pile. 2 of them were Clubs, 4 were Hearts, and 2 were Diamonds. What is the probability that the next card she selects will be a Club?

$$13 - 2 = 11$$

$$52 - 8 = 44$$

$$\frac{11}{44} = \frac{1}{4}$$

Name: _____ School Team: _____

Circle your final answer!

Event 5: Team Problems (with calculator)

Part 3: Ratios (5 points each)

Remember to simplify all ratios if able!

3. At a bus stop, there are 14 men, 12 women, 5 girls, and 3 boys.

a) What is the ratio of the number of children to the number of adults?

$$8:26 = \boxed{4:13}$$

b) What is the ratio of the number of women to the number of boys?

$$12:3 = \boxed{4:1}$$

c) If some more girls arrive at the bus stop and the ratio of the number of adults to the number of children is now 2:1, find the number of girls who arrived.

26 adults, must be 13 kids

$$13 - 8 = 5$$

5 girls

d) All of the people originally at the bus stop board a bus. The ratio of the number of men to the number of women to the number of children on the bus is 3:2:1. If there were no children already on the bus, find the smallest number of men that could have been on the bus before the new people boarded.

10 men

men	women	children
3	2	1
24	16	8 ← must be
bus stop ↓ 24 - 14 = 10	bus stop ↓ 16 - 12 = 4	

Name: _____ School Team: _____

Circle your final answer!

Event 5: Team Problems (with calculator)

Part 4: Percent Problem Solving (5 points each)

Remember to simplify all fractions if able!

4.

- a) 20% of a class of 40 students play volleyball, 15% of the class plays basketball, 35% of the class plays football and 50% of the rest of the students play soccer. If no student plays 2 sports, how many students play soccer?

8 → volleyball
6 → basketball
14 → football

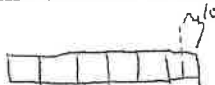
10% of 40 is 4
5% of 40 is 2

$$50\% \text{ of } (40 - 8 - 6 - 14) = 50\% \text{ of } 12 = 6$$

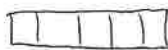
6

- b) Tyrone has 20% more balloons than Riyah. If Tyrone gives 10 balloons to Riyah, they will have the same number of balloons. How many balloons does Riyah have?

Tyrone's balloons



Riyah's balloons



$$10 \times 2 = 20$$

$$20 \times 5 = 100$$

Riyah has 100 balloons

- c) August and Gavin collect toy cars. August has 320% more toys cars than Gavin. If Gavin has 60 toy cars, how many toy cars does August have?

$$60 \rightarrow 100\%$$

$$12 \rightarrow 20\%$$

$$180 \rightarrow 300\%$$

$$60 + 180 + 12 = 252$$

August has 252 toy cars

- d) Madlyn has 15% more flowers in her garden than April has in her garden. If Madlyn has 46 flowers in her garden, how many flowers does April have in her garden?

$$\begin{array}{l} \div 23 \left(\begin{array}{l} 46 \rightarrow 115\% \\ 2 \rightarrow 5\% \end{array} \right) \div 23 \\ \times 20 \left(\begin{array}{l} 40 \rightarrow 100\% \end{array} \right) \times 20 \end{array}$$

April has 40 flowers in her garden

Name: _____ School Team: _____

TIE BREAKER

Find the next value in each of the following patterns:

1) 1, 1, 2, 3, 5, 8, 13, 21, 34

2) 3, 6, 8, 16, 18, 36, 38, 76

3) 98, 96, 92, 86, 78, 68, 56

4) -14, -12, -8, -2, 6

5) 5, 9, 7, 11, 9, 13, 11