

MATH 6: HOMEWORK 26
SOLVING EQUATIONS AND INEQUALITIES

1. Compute the following expressions:

$$\begin{array}{lll}
 -3 - (-2) & -3 - 3 & ((-4) \times 6) - 7 \\
 (-6) \div (-2) + 3 & (-2) \div (-3) & (-4) \times (-7) \div (+9) \\
 (-4) - (-3) + (-5) & (-6) + (-2) \div (-3) &
 \end{array}$$

2. Solve the following inequalities

$$\begin{array}{lll}
 \text{(a) } -x < 2 & \text{(b) } 2 - 3x > 5 & \text{(c) } 3x + 1 < 5x + 7 \\
 \text{(d) } 1 + 5x < 3x & \text{(e) } x - 1 < x - 7 &
 \end{array}$$

3. Solve the following equations and inequalities:

$$\begin{array}{lll}
 \text{(a) } (x - 1)(x - 2) = 0 & \text{(b) } x(x + 1) < 0 & \text{(c) } \frac{1}{x} > 2 \\
 \text{(d) } x^2 - 4 = 0 & \text{(e) } \frac{x}{x + 1} > 1 &
 \end{array}$$

4. In the figure below, each symbol stands for a number. The sum of numbers in each column or row is written next to the column or row — except for the second column, where the sum is not known. Can you find this missing sum?

☉	☆	▲	▲	96
▲	☉	☉	☉	92
☆	☆	☆	▲	140
☉	▲	☉	☆	108
108	?	108	96	

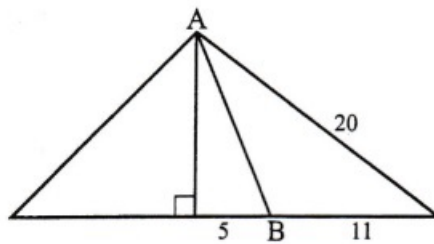
5. Old MacDonald raises sheep and chickens. His livestock has a total of 55 heads and 142 legs among them (not counting the farmer!). How many chickens and how many sheep does he have?

6. Mr. Sim jogs at 9 km per hour over a certain distance and walks back the same distance at 6 km per hour. What is his average speed? [Hint: the answer $(6 + 9)/2 = 7.5$ is wrong!].

7. Show, in a class of 40, there must be two students whose birthdays are less than 10 days apart.

8. January 1, 2018 was a Monday. What is the next year in which January 1 will fall on a Monday? (Mathcounts) *HINT: ordinary years have 365 days which is 52 weeks and 1 day, every fourth year called leap years, (those year numbers divisible by 4) has an extra day (called leap day—a 29th day added to February), giving leap years 52 weeks and 2 days. [NOTE: The rules for a year being a leap year are actually more complicated than this, but the simple rule of divisibility by 4 will give you the correct result until 2100.]*

9. Find AB (Mathcounts).



10. Three cubes are stacked as shown. If the cubes have edge 1,2 and 3 what is AB? (Mathcounts)

