

# **Math Challenge I-B: Pre-Algebra and Word Problems**

**Answer Key**

**Areteem Institute**

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## Chapter 1. Ratios and Percentages

### Quick Reponse Questions:

**1.11:** 45

**1.16:** 60

**1.12:** 25

**1.17:** 40

**1.13:** 30

**1.18:** 73.50

**1.14:** 66

**1.19:** 86.40

**1.15:** 30

**1.20:** 3

### Practice Questions:

**1.21(a):** 389

**1.26:** \$475.75

**1.21(b):** 4

**1.27:** 16

**1.22:** \$10

**1.28:** 5%

**1.23:** \$81

**1.29:** 50%

**1.24:** 0

**1.30:** First part \$120, second part \$50, third part \$200

**1.25:** 7%

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## Chapter 2. Sums, Differences, and Multiples

### Quick Reponse Questions:

**2.11:** 4

**2.16:** 30

**2.12:** 6

**2.17:** 240

**2.13:** 20

**2.18:** 36

**2.14:** 1.50

**2.19:** 23

**2.15:** 15

**2.20:** 21

### Practice Questions:

**2.21:** 1075 and 1225

**2.26:** Suzi: 8; Lisa: 16

**2.22:** Friend's cake: 12 candles;  
Twin's cakes: 4 candles, each

**2.27:** Girls: 17; Boys: 31

**2.23:** 3<sup>rd</sup> grade: 34; 4<sup>th</sup> grade: 45;  
5<sup>th</sup> grade: 29

**2.28:** Jack: 49; John: 51; Jill: 59

**2.24:** Tom: 6; Jerry: 4

**2.29:** Old Wendy: 9 pounds; Old  
McDonald: 27 pounds

**2.25:** Basketballs: 24; Soccer balls:  
64; Volleyballs: 24

**2.30:** 870

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## Chapter 3. Chickens and Rabbits

### Quick Reponse Questions:

**3.11:** 160

**3.16:** 13

**3.12:** 60

**3.17:** 40

**3.13:** 58

**3.18:** 18

**3.14:** 20

**3.19:** 8

**3.15:** 6

**3.20:** 80

### Practice Questions:

**3.21:** 26 chickens, 19 rabbits

**3.26:** 5

**3.22:** 35 cars, 25 motorcycles

**3.27:** 44 ducks, 36 sheep

**3.23:** 68 pentagons, 20 triangles

**3.28:** \$17

**3.24:** 15

**3.29:** 25 big mice, 75 baby mice

**3.25:** 7 salads, 13 pizzas

**3.30:** 40 \$2, 20 \$5, 20 \$10 bills

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## Chapter 4. Extending Chickens and Rabbits

### Quick Reponse Questions:

**4.11:** 42

**4.16:** 3

**4.12:** 9

**4.17:** 8

**4.13:** 7

**4.18:** 62.5

**4.14:** 26

**4.19:** 20

**4.15:** 6

**4.20:** 4

### Practice Questions:

**4.21:** 5

**4.26:** 7

**4.22:** 12 gallons 25% solution, 18 gallons 50% solution

**4.27:** 20 big containers, 30 small containers

**4.23:** 4%: 75 pounds, 20%: 45 pounds

**4.28:** 20 large, 40 small

**4.24:** 20 red, 30 green, 30 blue

**4.29:** 20

**4.25:** 7 spiders, 5 fireflies, 4 cicadas

**4.30:** \$420

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## Chapter 5. Motion

### Quick Reponse Questions:

**5.11:** No.

**5.16:** 40

**5.12:** Yes.

**5.17:** 3

**5.13:** D.

**5.18:** 42.5

**5.14:** 40

**5.19:** 20

**5.15:** 80

**5.20:** 4

### Practice Questions:

**5.21:**  $\frac{3}{7}$  miles per minute

**5.26:** 48 miles per hour

**5.22:** 55 miles per hour

**5.27:** 3.4 hours

**5.23:** 9 hours

**5.28:** 4 hours and 30 minutes

**5.24:**  $\frac{1300}{23}$  miles per hour

**5.29:** Sami: 6 meters/sec, Rajan: 4 meters/sec

**5.25:** 25 minutes

**5.30:** (i) 6 seconds, (ii)  $\frac{22}{3}$  seconds

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## Chapter 6. Problem Solving with Motion

### Quick Reponse Questions:

**6.11:** 40

**6.16:** 101

**6.12:** 31.5

**6.17:** 2

**6.13:** 3

**6.18:** 12.5

**6.14:** 60

**6.19:** 6

**6.15:** 13

**6.20:** 100

### Practice Questions:

**6.21:** 54 miles per hour

**6.26:** 300 miles

**6.22:** 24 days

**6.27:** 4 miles per hour

**6.23:** 30 miles

**6.28:** 15 seconds

**6.24:**  $\frac{600}{19}$  cm per minute

**6.29:**  $\frac{550}{43}$  mph

**6.25:** 15

**6.30:** 1488 miles

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## Chapter 7. Work

### Quick Reponse Questions:

**7.11:** 6.5

**7.16:** D

**7.12:** 1000

**7.17:** 72

**7.13:** 1.5

**7.18:** 90

**7.14:** 90

**7.19:** 50

**7.15:** B

**7.20:** 3

### Practice Questions:

**7.21:**  $\frac{6}{7}$  hours

**7.26:** 20 minutes

**7.22:** 6 hours

**7.27:** Iris: 96 days, Olivia:  $\frac{32}{3}$  days

**7.23:**  $\frac{4}{5}$  hours

**7.28:**  $\frac{3}{5}$

**7.24:**  $1\frac{2}{3}$  minutes

**7.29:** 15 minutes.

**7.25:**  $\frac{30}{47}$  hours.

**7.30:** Bob



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## Chapter 8. Problem Solving with Work

### Quick Reponse Questions:

**8.11:** 25

**8.16:** C

**8.12:** 2

**8.17:** 12

**8.13:** 5

**8.18:** 160

**8.14:** D

**8.19:** 2

**8.15:** A

**8.20:** 3

### Practice Questions:

**8.21:** 6.25 hours

**8.26:**  $6\frac{1}{4}$ .

**8.22:**  $\frac{25}{2}$  hours and  $\frac{25}{3}$  hours

**8.27:** 1050

**8.23:**  $\frac{60}{17}$ .

**8.28:**  $4\frac{2}{3}$ .

**8.24:** Ben: 10 days, Jack: 15 days

**8.29:** 960

**8.25:** 10 days

**8.30:**  $\frac{7}{4}$  hours

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## Chapter 9. Linear Equations

### Quick Reponse Questions:

**9.11:** B

**9.16:**  $-2.5$

**9.12:** C

**9.17:**  $3.75$

**9.13:**  $-2$

**9.18:**  $-9$

**9.14:** 3

**9.19:** 108

**9.15:** C

**9.20:** C

### Practice Questions:

**9.21:** (i) slope is 2,  $x$ -intercept is  $-7/2$ ,  $y$ -intercept is 7; (ii)  $y = 2x + 7$ ; (iii)  $-2x + y = 7$ .

**9.25:** 391 nickels and 390 dimes.

**9.22(a):**  $x = 3$ .

**9.26:** Roberto: 12 hours, Jean: 24 hours 24 minutes.

**9.22(b):**  $x = \frac{6}{7}$ .

**9.27:**  $\frac{2630}{429} \approx 6.13$  m/s.

**9.23:**  $\frac{5}{7}$ .

**9.28:** 2

**9.24:** 80 mph

**9.29:** 30

**9.30:** 300