

Rate of Work Problems Jan 8, 2013

1. Given: Ahmed takes 2h to mow lawn
Sami takes 4h to mow the lawn

Find what fraction of the lawn does each mow in one hour?

Ahmed $\frac{1}{2}$ lawn in one hour.

Sami $\frac{1}{4}$ lawn in one hour

3. Given: 4 min to fill tank with large hose
6 min to fill tank with small hose.
Find: using both hoses, how long does it take to fill the tank?

Let x = combined time

$$\frac{3x}{4 \times 3} + \frac{2x}{6 \times 2} = \frac{1x}{1 \times 12}$$

$$\begin{array}{r} 3x + 2x = 12 \\ \hline 5x = 12 \\ \hline 5 \end{array}$$

$$x = 2.4$$

∴ It takes 2 min 24 sec to fill the tank with both hoses

5. Given: Murray can tile floor in one hour
and his partner can tile it in $\frac{1}{2}$ hour
Find: how long if they work together

Let x = the combined time

$$x + 0.5x = 1$$

$$\frac{1.5x}{1.5} = \frac{1}{1.5}$$

$$x = 0.\bar{6}$$

$$\frac{x}{1} + \frac{1}{2}x = \frac{1}{1}$$

$$2x + x = 2$$

$$3x = \frac{2}{3}$$

$$x = \frac{2}{3}$$

$\therefore$ It takes 40 min if
they work together

9. Given: Mary takes 3h to do a job
and Mary + Jim together take 2 hours
Find: how long does it take Jim to do
the job alone.

Let x = Jim's time alone.

$$\frac{2^x}{3x} + \frac{2^{x^3}}{3x} = \frac{1^x 3x}{1^x 3x}$$

$$2x + 6 = 3x - 2x$$

$6 = x$
 $\therefore$ It takes Jim 6 hours to do the job by himself.

Square Roots + Powers



exponents

$$1. \sqrt{49} = 7$$

$$2. \sqrt{81} = 9$$

$$3. \sqrt{121} = 11$$

$$4. \sqrt{625} = 25$$

$$5. \sqrt{0.64} = 0.8$$

$$6. \sqrt{0.01} = 0.1$$

$$7. \sqrt{1.96} = 1.4$$

$$8. \sqrt{0.25} = 0.5$$

$$9. \sqrt{25} = 5$$

$$10. \sqrt{100} = 10$$

$$15. \sqrt{0.04} = 0.2$$

$$16. \sqrt{1.21} = 1.1$$

$$17. -\sqrt{0.81} = -0.9$$

37. to the nearest tenth

$$\sqrt{31}$$

$$= 5.567$$

$$\approx 5.6$$

$$39. \sqrt{62}$$

$$= 7.87$$

$$\approx 7.9$$

$$41. \sqrt{101}$$

$$= 10.049$$

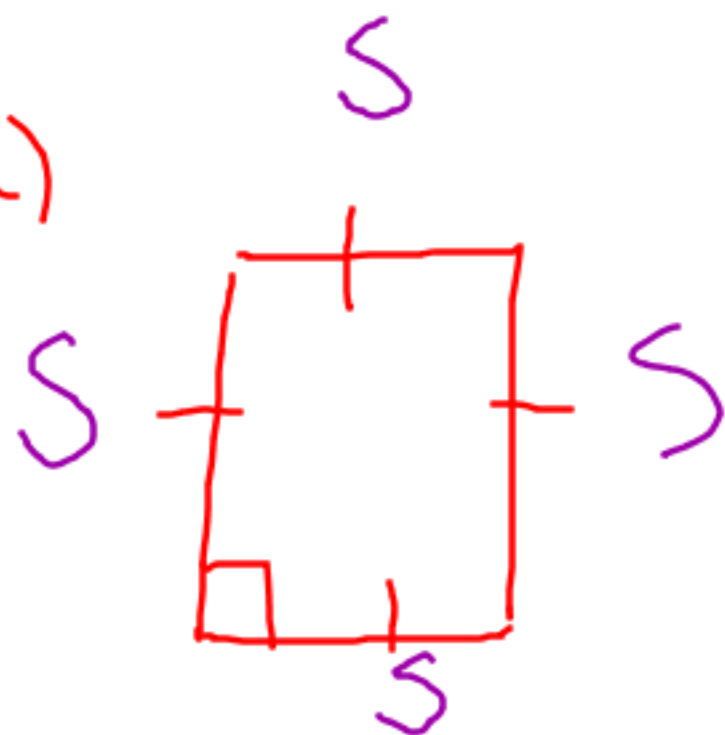
$$\approx 10.1$$

$$\begin{aligned}
 47. \quad & \sqrt{3} + \sqrt{7} \\
 &= 1.73 + 2.64 \\
 &= 4.37 \\
 &= 4.4
 \end{aligned}$$

$$\begin{aligned}
 53. \quad & \sqrt{14} \div \sqrt{5} \\
 &= 3.741 \div 2.236 \\
 &= 1.67 \\
 &= 1.7
 \end{aligned}$$

$$\begin{aligned}
 52. \quad & 2\sqrt{12} - 8 \\
 &= 2(3.46) - 8 \\
 &= 6.92 - 8 \\
 &= -1.08 \\
 &= -1.1
 \end{aligned}$$

59. a)



$$A = 25 \text{ cm}^2$$

$$A = L \times w$$

$$A = s \times s$$

$$A = s^2$$

$$25 = s^2$$

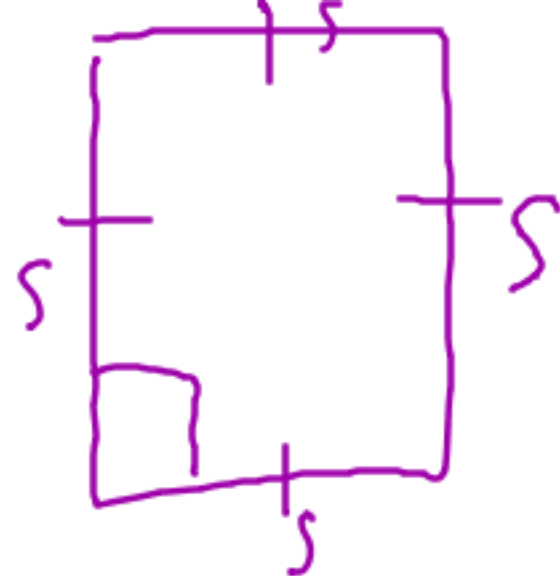
$$s = 5 \text{ cm}$$

$$P = s + s + s + s$$

$$P = 5 + 5 + 5 + 5$$

$$P = 20 \text{ cm}$$

59 c



$$A = 55 \text{ m}^2$$

$$A = s^2$$
$$\sqrt{55} = \sqrt{s^2}$$
$$7.41 = s$$

$$P = 4s$$

$$P = 4(7.41)$$

$$P = 29.6 \text{ m}$$

60a) Evaluate for $a=5$ $b=-2$

$$\sqrt{4a+2b}$$

$$c) \sqrt{-18b}$$

$$= \sqrt{4(5) + 2(-2)}$$

$$= \sqrt{-18(-2)}$$

$$= \sqrt{20-4}$$

$$= \sqrt{16}$$

$$= 4$$

$$e) -\sqrt{(ab)^2}$$
$$= -\sqrt{(5 \times -2)^2}$$

$$= -\sqrt{(-10)^2}$$

$$= -\sqrt{100}$$

$$= -10$$

$$= \sqrt{36}$$
$$= 6$$

61. a)



$$P = 5\sqrt{3} + 3\sqrt{3} + 4\sqrt{3}$$

$$P = 12\sqrt{3}$$

$$P = 12(1.7)$$

$$P = 20.4 \text{ cm}$$

Homework

Rate of work - back of sheet &
hand-out - first six
questions

P. 149 thru

61b.