

# Workkeys - Applied Math

KEYSHEET  
Applied Mathematics Practice Test

NUMBER	KEY	NUMBER	KEY
1	D	17	C
2	G	18	G
3	B	19	C
4	G	20	K
5	E	21	C
6	J	22	H
7	C	23	B
8	J	24	K
9	C	25	E
10	J	26	J
11	B	27	E
12	H	28	J
13	A	29	A
14	F	30	H
15	D	31	D
16	H	32	G
		33	C

## WorkKeys *Applied Mathematics* Level Estimates

**NOTE:** These items are mapped to WorkKeys levels and can give an indication of skills levels likely to be achieved on actual WorkKeys assessments. However, remember that these are practice materials only, have not been psychometrically calibrated, and **DO NOT** substitute for official WorkKeys tests and scores. They are intended to be used for developmental/training purposes only.

Number of Items Correct	Estimated Level Score
0-12	<3
13-16	3
17-21	4
22-25	5
26-28	6
29+	7

1. A grocer takes delivery of beverages from your truck at \$6 per case. You unloaded 53 cases for the grocer today. How much does the grocer owe you?

- A. \$ 9
- B. \$ 47
- C. \$ 59
- D. \$318
- E. \$653

$$53 \times 6 = \$318$$

2. To make curtains for a living room window for a customer you will need three pieces of fabric in the following lengths: 3 feet, 3 feet, and 5 feet. What is the total length of fabric you will need?

- F. 8 feet
- G. 11 feet
- H. 14 feet
- J. 30 feet
- K. 45 feet

$$3 + 3 + 5 = 11$$

3. In your job as a cashier, a customer gives you a \$20 bill to pay for a can of coffee that costs \$3.84. How much change should you give back?

$$20 - 3.84 = 16.16$$

- A. \$15.26
- B. \$16.16
- C. \$16.26
- D. \$16.84
- E. \$17.16

4. You sell pies at a farmers' market for \$7.50 each. A group of 5 kids wants to pitch in equally to share one of your pies. How much will each of them need to pay to buy a whole pie together?

$$7.50 \div 5 = 1.50$$

- F. \$0.75
- G. \$1.50
- H. \$2.50
- J. \$3.75
- K. \$7.50

5. Your warehouse had 51 cases of Happy Cola at the start of your shift. A truck arrived this morning with another 25 cases of Happy Cola. How many cases of Happy Cola do you have now?

$$51 + 25 = 76$$

- A. 2
- B. 25
- C. 26
- D. 51
- E. 76

6. You work at a fruit market. Bananas cost 50¢ a pound. A customer hands you a bunch of bananas that weighs 3 pounds. How much should you charge for the bunch of bananas?

$$3 \times .50 = 1.50$$

- F. \$0.17
- G. \$0.50
- H. \$0.53
- J. \$1.50
- K. \$3.50

7. As a bowling instructor, you figure your students' averages during tournaments. In 5 games, one bowler had the following scores: 143, 156, 172, 133, and 167. What was that bowler's average?

- A. 147
- B. 153
- C. 154
- D. 156
- E. 161

$$\frac{143+156+172+133+167}{5} = 154$$

8. You need about  $1\frac{1}{2}$  hours to set up a computer workstation. At this rate, how many hours should it take you to set up 7 of these workstations?

- F.  $4\frac{2}{3}$
- G.  $8\frac{1}{2}$
- H. 10
- J.  $10\frac{1}{2}$
- K.  $11\frac{2}{3}$

$$7 \times 1.5 = 10.5$$

9. You are balancing the checking account for your lawn-care business. Based on the check register below, how much money is in the account?

Check number	Date	Memo	Check amount	Deposit amount	Balance
	7/1	Deposit		\$581.22	\$581.22
101	7/3	Rake & axe	-\$27.91		\$ .
102	7/5	Van repair	-\$52.81		\$ .
103	7/5	New mower	-\$265.80		\$ .
104	7/6	Gas	\$10.00		\$224.70
	7/31	Deposit		\$330.67	\$555.37

- A. \$330.67
- B. \$356.52
- C. \$555.37
- D. \$581.22
- E. \$911.89

10. The diaper service where you work bills customers once a week. Each week, it charges 30¢ each for the first 75 diapers used, and 25¢ each for any additional diapers. How much should you bill a family that used 100 diapers last week?

$$.30(75) + .25(25)$$

$$22.5 + 6.25 = 28.75$$

- F. \$18.75
- G. \$22.50
- H. \$25.00
- J. \$28.75
- K. \$30.00

11. For your job, you often fly between Seattle and Miami. The distance between these cities is 2,724 miles. You earn free flight after you accumulate 25,000 miles of travel. How many round trips (back and forth) must you make between Seattle and Miami in order to earn a free flight?

- A. 4
- B. 5
- C. 8
- D. 9
- E. 10

$$\begin{array}{r} 5,448(x) = 25,000 \\ \hline 5,448 \quad 5,448 \end{array}$$

$$x = 4.58$$

12. You are a receptionist at a doctor's office. A patient's bill for a checkup totals \$85.00. The patient's health insurance requires the patient to pay 20% of the total bill. How much should the patient pay for the checkup?

- F. \$ 4.25
- G. \$ 8.50
- H. \$17.00
- J. \$42.50
- K. \$68.00

$$.20 \times 85 = 17.00$$

13. You are scheduling a new delivery route and you need to find out how long it will take a driver to complete the route. You start the route at 9:50 A.M. and finish at 2:05 P.M. How long does it take to drive the route?

- A. 4 hours 15 minutes
- B. 4 hours 55 minutes
- C. 5 hours 15 minutes
- D. 5 hours 45 minutes
- E. 7 hours 45 minutes

14. You are making a welding fixture and must cut down a length of steel tubing from  $19\frac{3}{8}$  inches to  $11\frac{9}{16}$  inches.

When you cut the tubing, you will waste  $\frac{1}{16}$  inch of it because of the width of the saw cut. If the leftover piece is long enough, you will use it in another fixture. How long will this leftover piece be?

F.  $7\frac{3}{4}$

G.  $7\frac{13}{16}$

H.  $7\frac{7}{8}$

J.  $8\frac{1}{4}$

K.  $8\frac{3}{4}$

$$19\frac{3}{8} - 11\frac{9}{16} = 8$$

$$8 - \frac{3}{16} = 7\frac{13}{16} - \frac{1}{16} = 7\frac{12}{16}$$

or

$$7\frac{3}{4}$$

15. A refrigeration system at your company uses temperature sensors fixed to read Celsius ( $^{\circ}\text{C}$ ) values, but the system operators in your control room understand only the Fahrenheit scale. You have been asked to make a Fahrenheit ( $^{\circ}\text{F}$ ) label for the high temperature alarm, which is set to ring whenever the system temperature rises above  $-10^{\circ}\text{C}$ . What Fahrenheit value should you write on the label?

A.  $-50^{\circ}\text{F}$

B.  $-23^{\circ}\text{F}$

C.  $-18^{\circ}\text{F}$

D.  $14^{\circ}\text{F}$

E.  $26^{\circ}\text{F}$

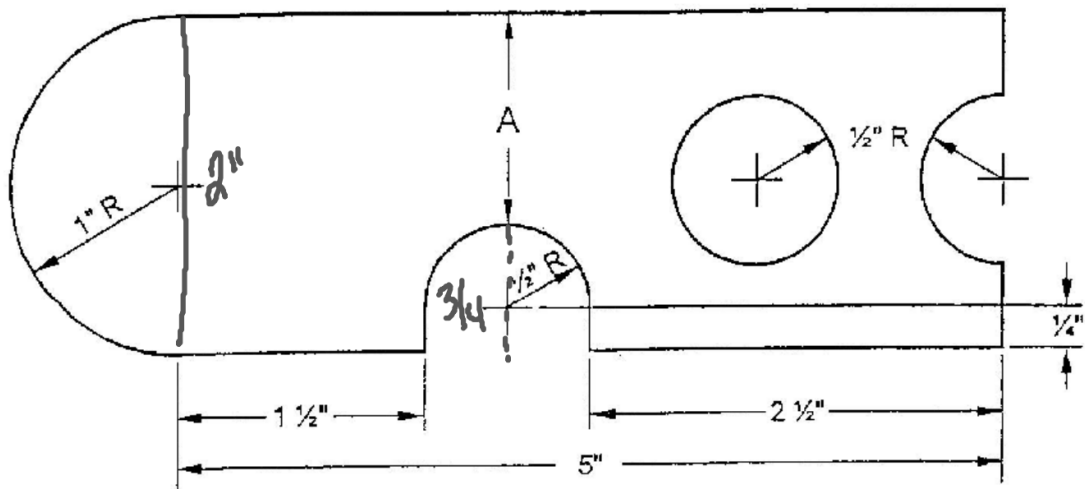
$$F = 1.8(C^{\circ}) + 32$$

$$= 1.8(-10) + 32$$

$$= -18 + 32$$

$$= 14$$

16. You check on manufactured parts in a factory. You need to take measurements to ensure quality. According to the drawing shown, what is the measurement of dimension A?



- F.  $\frac{3}{4}''$   
 G.  $1''$   
 H.  $1\frac{1}{4}''$   
 J.  $1\frac{1}{2}''$   
 K.  $1\frac{3}{4}''$

17. The price of a shampoo, cut, and style at the hairstyling salon where you work is \$18.00. You generally get a 20% tip from each customer, and the salon owner pays you  $\frac{1}{4}$  of each job's cost. On a typical day, you give shampoos, cuts, and styles to 8 customers. About how much can you expect to earn for yourself on such a day?

- A. \$ 48.96  
 B. \$ 57.60  
 C. \$ 64.80  
 D. \$147.60  
 E. \$208.80

Per Job

$$\frac{1}{4} \text{ of } 18 = 4.50$$

$$.2 \text{ of } 18 = 3.60$$

$$8.10 \times 8 = 64.80$$

18. As a laboratory assistant, you measure chemicals using the metric system. For your current research, you need to measure out 45 grams of sodium chloride. The bottle you are using lists the amount in ounces. About how many ounces of sodium chloride will you need?

- F. 0.1
- G. 1.6
- H. 28.4
- J. 720.0
- K. 1,275.8

$$1 \text{ ounce} = 28.35 \text{ g}$$

$$\frac{45 \text{ g}}{28.35 \text{ g}} = 1.6$$

19. You are doing marketing research to find out the purchasing potential of students in the community. Based on the latest census, there are 9,860 students in a population of 62,400 people. What percent of the total population is students?

- A. 6.3
- B. 7.3
- C. 15.8
- D. 52.5
- E. 84.2

$$\frac{9,860}{62,400} = .158 \text{ OR } 15.8\%$$

20. Your client has saved \$1,860 for a down payment house. A government loan program requires a down payment equal to 3% of the loan amount. What is the largest loan amount that your client could receive from the program?

- F. \$ 5,580
- G. \$ 6,200
- H. \$55,800
- J. \$61,380
- K. \$62,000

$$\frac{.03(x) = 1,860}{.03 \quad .03}$$



21. At Appliance City you sold a refrigerator to a customer for \$369.00. Appliance City advertises that if a customer finds the same refrigerator anywhere else for a lower price you will give them a refund equal to 150% of the price difference. A customer arrives with a Kitchen Stuff Inc. ad that shows the same refrigerator for \$335.00. After giving the advertised refund to the customer, what is the customer's final cost?

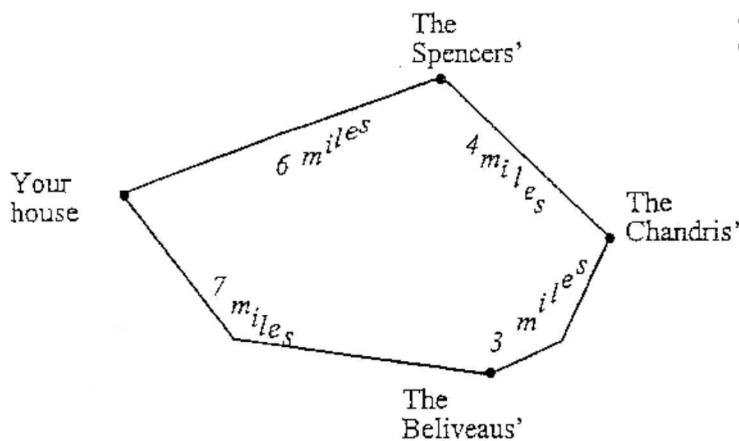
- A. \$ 51.00
- B. \$219.00
- C.** \$318.00
- D. \$335.00
- E. \$364.00

$$369 - 335 = 34$$

$$34 \times 1.5 = 51$$

$$369 - 51 = 318$$

22. The map below shows the location of 3 houses where you had to do lawn work today. Your truck gets 8 miles per gallon of gasoline, so you chose the shortest route from your house to the jobs and then back home, as shown below. If gas costs \$1.52 per gallon, what was the total cost of the gas that you used today?



20 total miles

$$20/8 = 2.5$$

$$2.5 \times 1.52 = \$3.80$$

- F. \$2.50
- G. \$3.42
- H.** \$3.80
- J. \$6.20
- K. \$7.50

13. You need to haul a load of patio bricks to a job site. Each brick weighs 4 pounds 14 ounces. Your truck can carry a  $\frac{3}{4}$ -ton load. How many bricks can your truck carry in a full load?

- A. 300
- B. 307
- C. 362
- D. 409
- E. 483

$$\frac{1,500 \text{ pounds}}{14.875} = 307.69$$

1 ton = 2,000 pounds  
 $\frac{3}{4}$  ton = 1,500 pounds

$$\frac{14 \text{ oz}}{16 \text{ oz}} = .875$$

14. You are applying fertilizer to a football field. The field is 360 feet long and 160 feet wide. You use 8 pounds of fertilizer per 1,000 square feet. The fertilizer comes in 50-pound bags. How many bags of fertilizer will you need to complete the job?

- F. 6
- G. 7
- H. 8
- J. 9
- K. 10

$$\boxed{57,600} \times 160 = 360$$

$$57,600 \times 8 = \frac{460,800}{1,000} = \frac{4,608}{50} \approx 10$$

25. You are a school photographer taking individual and class pictures for 2 classes of 21 students each. On average, each individual picture takes 3 minutes and a class picture takes 10 minutes. About how long should it take you to get all of the pictures?

- A. 1 hour 3 minutes
- B. 1 hour 13 minutes
- C. 2 hours 6 minutes
- D. 2 hours 16 minutes
- E. 2 hours 26 minutes

$$42 \text{ Kids total} = 42 \times 3 = 126 \text{ min}$$

$$2 \text{ classes} = 10 \times 2 = 20 \text{ min}$$

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$$146 \text{ min}$$

26. You need to put oil into the gearbox of a rebuilt machine tool. The gearbox holds 16.3 liters of oil but the only oil you have is in 1-quart containers. How many of the 1-quart containers of oil will you need to fill the gearbox with 16.3 liters of oil?

- F. 1
- G. 5
- H. 17
- J. 18
- K. 62

$$16.3 \text{ L} \times \frac{.264 \text{ gal}}{1 \text{ L}} \times \frac{4 \text{ qt.}}{1 \text{ gal}} = 17.2 \text{ qts}$$

27. At the metal-casting company where you work, you must set up a conveyor system to move castings from the furnace to the heat treatment area 55 yards away. The castings cool at the rate of  $0.3^{\circ}\text{F}$  (degrees Fahrenheit) per second and must not be allowed to cool more than  $7^{\circ}\text{F}$  before being heat treated. What is the minimum speed, in feet per second, that the conveyor must move?

- A. 2.10
- B. 2.36
- C. 2.62
- D. 4.86
- E. 7.07

$$\frac{.3(s)}{.3} = \frac{7}{.3}$$

$$s = 23.3 \text{ sec}$$

$$55 \text{ yards} \times 3 \text{ ft} = 165 \text{ ft}$$

$$\frac{165}{23.3} = 7.08 \text{ ft per sec.}$$

28. Five days a week, you carpool with 3 co-workers and take turns driving each week. It is 14 miles from your home to your office. When you drive the carpool you must go an extra 4 miles to pick up your co-workers. If your car averages 18 miles per gallon, about how many gallons of gas should you save every 4 weeks by carpooling?

- F. 4.2
- G. 8.9
- H. 10.1
- J. 21.1
- K. 31.1

$$4 \text{ weeks} \times 5 \text{ days} = \frac{20 \text{ total days}}{4 \text{ people}} = 5 \text{ days each}$$

$$\text{Drive alone} = 20 \times 28 = 560$$

$$\text{CAR POOL} = 5 \times 36 = 180$$

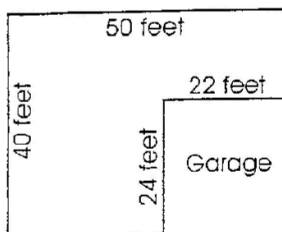
$$(14+14+4+4) \quad \nearrow \quad \frac{380 \text{ miles}}{18} = 21.1 \text{ gallon}$$

29. You just finished paving a rectangular driveway measuring 75 feet by 20 feet. You charged the customer \$1,000. After deducting the expenses shown below, how much profit did your company make on this job?

Item/Expense	Unit Cost	Quantity	Total Expense
gravel	\$15 per cubic yard	12 ½ cubic yards	\$187.50
tar/sealant	15¢ per square foot	75 ft by 20 ft	\$225.00
labor	\$10 per hour	25 hours	\$250.00
insurance	Not applicable	Not applicable	\$45.00

- A. \$292.50  
 B. \$300.00  
 C. \$337.50  
 D. \$517.35  
 E. \$707.50

30. You need to pump water out of a flooded basement, using two 50-gallon-per-minute (gpm) pumps. The basement has the dimensions shown and is flooded to a depth of 16 inches. How long will it take to pump the water out of the basement?



$$\frac{1,840 \text{ cubic ft}}{1} \times \frac{1,728 \text{ cubic in}}{1 \text{ cubic ft}} \times \frac{1 \text{ gal}}{231 \text{ cubic in}} = 13,764.15 \text{ gal}$$

- F. 18 minutes  
 G. 1 hour 47 minutes  
 H. 2 hours 27 minutes  
 J. 3 hours 19 minutes  
 K. 4 hours 54 minutes

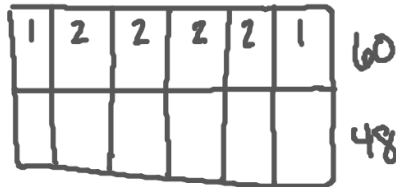
$$13764.15 \text{ gal} \times \frac{1 \text{ min}}{50 \text{ gal}} = 275 \text{ min}$$

or  
4.5 hrs.

$$4.5 \text{ hrs} \div 2 = 2 \text{ hrs } 27 \text{ min}$$

31. To complete bookshelves, a customer at your store needs to purchase vertical brackets to attach to the wall. The customer wants the shelving to be 9 feet high and 10 feet long. The wall brackets come in 48-inch and 60-inch sections. The 48-inch sections cost \$12.95; the 60-inch sections cost \$16.95. The brackets should be 1 foot from each end and no more than 24-inches apart. What will be the total cost of the brackets, before tax?

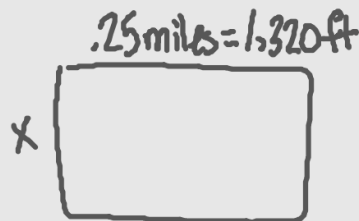
- A. \$ 89.70
- B. \$119.60
- C. \$129.50
- D. \$149.50
- E. \$179.40



$$\begin{array}{r}
 5 \times 12.95 = 64.75 \\
 5 \times 84.75 = 84.75 \\
 \hline
 149.50
 \end{array}$$

32. You have to order fencing for a 25-acre, rectangular field. One side of the field measures exactly  $\frac{1}{4}$  mile. How many yards of fencing will you need to enclose the field completely?

- F. 1,320
- G. 1,430
- H. 4,290
- J. 363,000
- K. 1,089,000



$$\begin{array}{r}
 1 \text{ ac} = 43,560 \text{ sq. ft.} \\
 \times 25 \\
 \hline
 1,089,000 \text{ total sq. ft.}
 \end{array}$$

$$\begin{array}{r}
 1,320(x) = 1,089,000 \\
 \hline
 1,320 \quad 1,320
 \end{array}$$

$$x = 825 \text{ ft.}$$

$$P = 2(825) + 2(1,320)$$

$$P = 4,290 \text{ ft}$$

$$\rightarrow \frac{4,290}{3} = 1,430 \text{ yd.}$$

33. You are an urban planner assessing the growth of a city. Ten years ago, the city's population was 249,583. Its current population is 318,270. By about what percentage has the city grown over the past ten years?

- A. 13%
- B. 22%
- C. 28%
- D. 69%
- E. 78%

$$318,270 - 249,583 = 68,687$$

$$\frac{68,687}{249,583} = .275 \text{ or } \boxed{27.5\%}$$