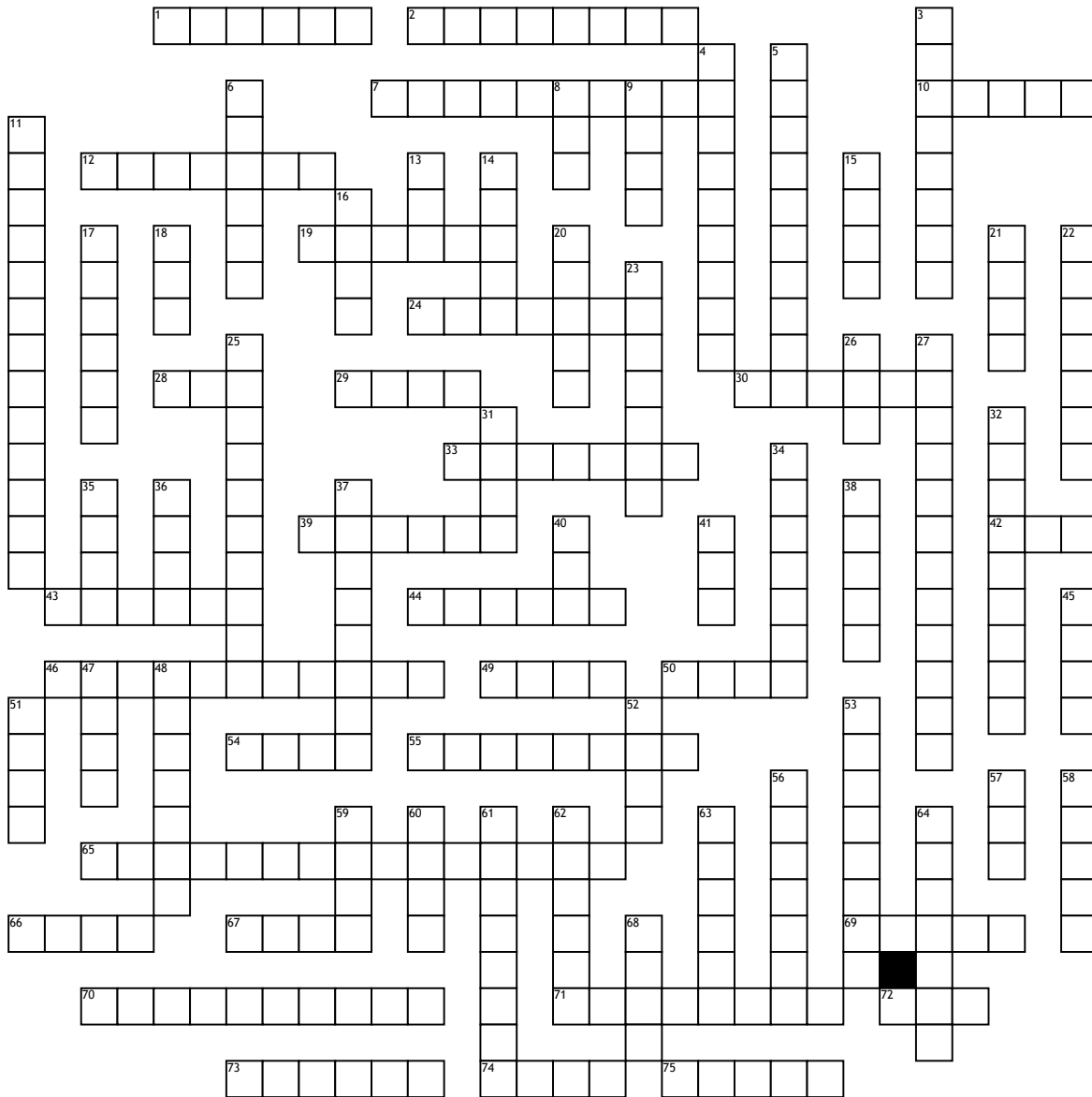


# Miner's Challenge



- Across**
- 1. Vein containing no coal or a coal seam too thin to work
  - 2. British name for a coal mine
  - 7. Dust particles 5 microns or less in size
  - 10. Overburden of any deposit
  - 12. Coal that appears at or near the surface
  - 19. Air coming back out of the mine
  - 24. Failure of a blasting charge to explode
  - 28. 2000 pounds
  - 29. Exposed area of a coal bed where coal is being extracted
  - 30. Passage which fresh air is drawn in
  - 33. Process of separating coal from undesirable material using differences in densities
  - 39. Coal, crude oil and natural gas are \_\_\_\_\_ fuels
  - 42. Miner's safety helmet
  - 43. Document issued to give approval for mining to take place
  - 44. When doing flup/down, coal does this in water
  - 46. Plant where coal is cleaned
  - 49. Flat spike hammered into a wooden plug anchored in a hole drilled into the mine ceiling from which is threaded a plumbline
  - 50. To unload a load of coal
  - 54. Waste product of the process of smelting
  - 55. Cutting a representative part of an ore or coal deposit
  - 65. Machine that constantly extracts coal while it loads (2 words)
  - 66. Section of the conveyor at the extreme opposite end from the delivery point (2 words)
  - 67. Area where coal is removed or processed from its natural deposits
  - 69. Opposite of flup/down
  - 70. Middle rank coal referred to as "soft coal"
  - 71. Measured tonnages of coal remaining in a coal seal
  - 72. Voltage by federal standards which is 660 volts or less
  - 73. Protective covering of a cab on a mining machine
  - 74. Put explosives in a drilled hole or load material into a haulage device
  - 75. Mountain staircase created by the cutting of coal on the surface
- Down**
- 3. Mine waste or rock used to support the roof after coal removal
  - 4. Device with a small charge for setting off explosives
  - 5. Layers of soil and rock covering a coal seam
  - 6. Passage through which air is carried
  - 8. The side of a pillar or the wall of an entry
  - 9. Low place in a mine roof giving insufficient headroom
  - 11. Coal of a rank intermediate between lignite and bituminous
  - 13. Meas. of energy needed to raise the temperature of one pound of water by one degree Fahrenheit.
  - 14. When doing flup/down, pyritic sulfur (sulfur + iron), does this in water
  - 15. Solid, brittle, somewhat distinctly stratified combustible carbonaceous rock
  - 16. Bar used to support the roof between two walls
  - 17. Coal extraction machine that works by tearing the coal from the face.
  - 18. Area with waste where coal was removed
  - 20. Number of hours or the part of any day worked
  - 21. Exposed area of a coal bed where coal is being extracted
  - 22. Extensive crack or fracture in the rocks
  - 23. Potentially explosive gas formed naturally from the decay of vegetative matter
  - 25. Instrument for measuring air velocity
  - 26. Railway wagon
  - 27. Smooth, rounded piece of rock in the roof of a mine (2 words)
  - 31. Mass of roof rock that has dropped
  - 32. Term applied for a carbon dioxide and nitrogen mixture (2 words)
  - 34. Carrier of mine personnel to and from the work area (2 words)
  - 35. Cord used to ignite a cap
  - 36. Pile or mound of material capable of restraining a vehicle
  - 37. Vertical transport of coal and ore
  - 38. Rotary drill that penetrates with a screw device
  - 40. End of the drill rod used for the breakage of rock
  - 41. Mine roof
  - 45. Stratum or bed of coal
  - 47. Overhead surface of a coal working place
  - 48. Roof bolting
  - 51. Car being hoisted from a slope or shaft
  - 52. In the direction of the working face
  - 53. Apparatus for continuously moving material
  - 56. Horizontal transport of coal and ore
  - 57. Stratum of coal or other sedimentary deposit
  - 58. One who extracts coal, ore, etc. from the Earth
  - 59. Coal heated in a vacuum
  - 60. Federal agency which regulates mine health and safety
  - 61. Unexcavated face in a surface mine
  - 62. Machine that feeds coal onto a belt evenly
  - 63. Area of coal left to support the roof
  - 64. Portion of the working area of a mine
  - 68. Particles of coal that can pass a No. 20 sieve